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The Maryland Coal Company's Cumberland Coal.

WITH SUPPLEMENT.

THE Cumberland coal field occupies the western corner of the State of Maryland, and though of comparatively small extent, has long occupied the first position among the sources of supply of bituminous coal for the Atlantic seaboard. The reason for this pre-eminence is neither accidental nor capricious, but is due, 1st, to the superior quality of the coal produced, and 2d, to the fact that this excellent fuel is found in a bed of great thickness and well located for economical mining.

The field contains several beds of coal; the great, or 14 foot seam, is, however, the only one worked to any extent. The total area underlaid by this magnificent bed has been approximately ascertained by survey as 17,000 or 18,000 acres, and of this some 3,000 to 4 000 acres have already been worked out. The following figures show the progress of the Cumberland trade and the increasing favor with which this coal is received:

In 1842	there	were	sent	to	market	1,708 tons of 2,240 lb.	
" 1845	"	"	"	"		24,653 "	"
" 1850	"	"	"	"		196,848 "	"
" 1855	"	"	"	"		662,272 "	"
" 1860	"	"	"	"		788,909 "	"
" 1865	"	"	"	"		903,495 "	"
" 1870	"	"	"	"		1,717,075 "	"
" 1873	"	"	"	"		2,674,101 "	"
" 1874	"	"	"	"		2,340,000 "	" (estimated)

Total sent to market since 1842, 26,267,786 tons.

Comparing this with the area of the great bed worked out, assuming the average thickness of this as twelve feet, we perceive that abundance in coal, as in other things, induces wastefulness, and the Cumberland Companies *have wasted considerably more than half of all the coal* in that portion of the vein worked over. As beds of a similar character are worked in many other parts of the world with a loss not exceeding 10 to 15 per cent., there would appear to be little excuse for continuing here a ruinously wasteful system of mining that was tried, and has long been abandoned, elsewhere.

The reputation of Cumberland coal has long been established; it is, unquestionably, the best steam coal produced in this country; it contains from 73 to 80 per cent. fixed carbon; from 15 to 20 per cent. of volatile matter, and from 4 to 9 of ash. In the trials made for the United States Navy, by Prof. W. R. JOHNSON, it was found to evaporate a larger amount of water than any other coal tested.

It is classed as *a short flaming caking coal;* the particles cement and form what smiths call a hollow fire; it is, therefore, highly esteemed for forge purposes, while its general excellence for manufacturing purposes is causing it to replace anthracite quite largely. It has been noticed that manufacturers who were driven to the use of this coal during the period of excessively high prices of anthracite, a few years ago, have, in all cases, continued its use in preference to anthracite; hence the enormous increase in the output of this region within the past four years. The improved shipping facilities which the MARYLAND COAL COMPANY is providing, and which will enable it to deliver this superior fuel at a very low price and in excellent condition, must tend still further, to popularize the use of Cumberland coal.

Of all the coal derived from the basin, that from the lower or George's Creek region has acquired a justly deserved fame for its purity and excellence. The property of the Maryland Coal Company embraces 8000 acres of land, about 6000 of which are underlaid with the smaller veins, while nearly 1200 contain the large or 14 ft. vein, the only one which is now worked. These 1200 acres are at Lonaconing, in the heart of the George's Creek region. They are in one compact body, directly contiguous to the Cumberland and Pennsylvania railroad and admirably situated for easy and economical working. Three mines furnish coal of a uniform quality to two planes of a daily capacity of 1600 tons. A third plane, now dismantled, can be re-furnished at an inconsiderable expense, and the capacity of the works increased to 2500 tons per day without additional openings. The Company is, therefore, in a position to increase its product largely and at a trifling cost.

The coal from the Cumberland field reaches the seaboard either by all rail to Baltimore, say 210 miles; or by rail from the mines to Cumberland, from 12 to 33 miles, and thence by the Chesapeake and Ohio canal to Georgetown and Alexandria.

While it is well known that bituminous coal suffers a considerable deterioration from breakage in rail transportation, this, in the case of the Cumberland, has been more than counterbalanced by the breakage caused in loading and unloading the canal boats, and in the transhipment to large vessels at Georgetown; so that "Baltimore coal," that is, coal sent direct in cars to the shipping port, has been more highly esteemed, and commands, necessarily, a higher price, varying from 30 to 50 cents per ton, than the coal from the same mine sent by canal to Georgetown.

Canal transportation being much less expensive than that by rail, it is evident that, with such precautions taken in the handling of the coal as would prevent its breaking, and deliver it at Georgetown in at least as good condition as that delivered in Baltimore by rail, the difference in price would soon divert the greater portion of the business to the canal.

The MARYLAND COAL COMPANY, the second largest shippers in the region, mined in 1873, 304,133 tons of coal, or 11½ per cent., of the total output of the field. In 1873, 151,075 tons were sent to Georgetown by canal, and in 1874, 155,616 tons, being the largest quantity in each year shipped by any one company. Fully alive to the importance of furnishing the trade with coal, not only at the lowest possible price, but also of the finest quality and in the best possible condition, this enterprising company has perfected arrangements for trans-shipping coal from the canal to large vessels at Georgetown, that will almost entirely prevent breakage.

The beautiful Supplement with which we present the readers of the ENGINEERING AND MINING JOURNAL this week, shows these dock arrangements of Mr. RAY, the agent of the MARYLAND COAL COMPANY. While formerly (and as is usual now by other shippers) the coal, as raised from the canal boats, was dropped into cars, which were in turn dumped on the same level into a long, highly-inclined shoot, down which it rolled and tumbled till it reached the hold of the vessel, the car is now lowered down a plane till it delivers the coal directly in the vessel, with the least possible amount of breakage. It is proposed to have the body of the car moveable, so that it will be filled in the canal boat, and will deliver its contents directly in the hold of the vessel. The importance of these and other improvements adopted by this company, with the view of supplying the trade with the choicest coal of the Cumberland region in the best condition, cannot but secure for such enterprise the reward of increased business and confidence from the trade.

The Use of the Diamond Drill in Prospecting and Mining.

WITH SUPPLEMENT.

WE have several times published descriptions of the Diamond Drill, and have had the satisfaction of knowing that, in consequence of these articles, the use of this valuable invention has been much extended. We do not now propose to repeat our descriptions of the several machines which we illustrate in the accompanying Supplement, but will confine ourselves to calling attention to some of the advantages that may be obtained by the aid of these ingenious machines in practical mining operations; and as every engineer prefers rather to know what has actually been done than what may be considered as possible, we will confine ourselves principally to giving extracts of letters and reports from those who have done the work.

PROSPECTING FOR COAL.—In testing coal lands, especially where the measures are regular and but slightly inclined, and the coal hard, as is generally the case in the bituminous region, three or four holes bored with the Diamond Drill prove the general inclination of the measures and the thickness of the coal in a satisfactory manner. When the measures are more disturbed, as in the anthracite region, to thoroughly prove a property may require a greater number of holes; but when the object is simply to find the depth of a given bed from the surface, in order to make the proper plans and estimates for machinery, etc., for sinking a shaft and working the mine, a single hole will attain it.

The following are a few extracts from letters testifying to the work done by these drills. Mr. F. Z. SHELLENBURG, Superintendent of the Westmoreland Coal Company, under date of Feb. 18, 1874, says:

Boring for Bituminous Coal.—"Your Diamond Drill gives results, in testing the position and size of deep-lying strata, with admirable accuracy. A comparison of results from five holes by the old method of artesian boring, with the results from seven holes by the Diamond Drill is, that the boring of the Diamond Drill gives the position and size of strata with unquestionable correctness, while by the old artesian boring the results are the reverse; the *churning through the softer material, soaked with water tapped in passing, washes to the bottom quite a variety of findings for the sand-pump to bring up, and* LEAVES ALL IN DOUBT."

Mr. GRIFFITH JONES, Superintendent of the Steel Ore Company, Pottstown, Pa., says June 1st, 1873 :

Boring for Iron Ore.—"We take pleasure in announcing to you that your Diamond-Pointed Drill, which has been operating at the bottom of a shaft, on our lands at Boyertown, 62 feet from the surface, has just bored into a splendid vein of Iron Ore, at a depth of 315 feet from the bottom of the shatt alluded to, and then penetrated 211 feet into the ore.

"That very valuable feature of your Drill, by which you furnish actual specimens of the minerals through which you penetrate, has given us the actual cores of the hard portion of the ore through which the hole passed, showing us the stratification as no other method could possible have done."

Messrs. HEIM & GOODWILL, Shamokin, Pa., write :

Horizontal Boring.—"Your Diamond-Pointed Drill in use at our colliery has bored the full distance required, viz., 645 feet horizontally in the Locust Mountain, from the face of the tunnel, which we had driven as far as 200 yards in the measures underlying the twins or E veins, in hope of finding a good and workable vein of coal, but in which the land owners and ourselves were disappointed.

The information obtained by your Drill has shown that the veins are not workable south of the face of our tunnel, and contrary to what was supposed to be the case, from shaftings made on the surface ; this, though a great disappointment to us, is of much value to all concerned in this colliery, as *it saves any further loss in driving tunnel in that direction.* The measures this hole passes through are of the very hardest kind in this region, and we believe no other drill could have accomplished this work in a narrow tunnel."

Shaft Sinking.—General PLEASANTS, Engineer of the Philadelphia and Reading Coal and Iron Co., under whose direction several shafts are being sunk by "the long hole process," testifies to the value of the Diamond Drill for this purpose. We understand the Norwegian shafts are being put down at present at a rate which has averaged, for several months, 100 feet a month, and that at a depth exceeding 1,000 feet.

Submarine Drilling.—Major W. G. TURPIN, the U. S. Assistant Engineer in Charge of the James River Improvement, says :

"It affords me much pleasure to bear testimony to the efficiency of the Diamond Drill for submarine work.

"Since June, 1872, I have had two, purchased by the United States Engineers' Department, in use on James River in the removal of the ledge known at Rockett's Reef.

"The drills are 2½ inches in diameter ; with them we have been enabled to bore perfectly true circular holes, at as much as 25 feet from the rock, at right angles to the current. Some at an angle of 60 degrees from perpendicular. The average progress of the bit has been 3 feet per hour, though run at a low speed on account of the unknown and broken state of the rock. Where the character of the rock was known, as much as 5 feet per hour has been made. Much of the rock through which we have drilled is the well known James River granite. The repairs have been trifling, turning up the screws once on the tubing being all."

Boring for Lead.—GEORGE R. BISSEL, Superintendent, writes from Irondale, Mo., August 31, as follows :

"Since August 7th, we have drilled two more holes of 246 feet and 240 feet, respectively.

"Our separate day's work was as follows :

August 27th,	1st fractional day,	8	hours,	we drilled	50	feet.
" 28th,	1st whole day,	11	"	"	71	"
" 29th,	2d "	11	"	"	62	"
" 30th,	3d "	11	"	"	57	"
Total drilled in 3 8-11 days (=3 73-100 days,					240	"
Average per day of 11 hours each,					64¾	"

"To show what your Drill *can* do, with proper handling, you are at liberty to publish this statement if you so desire."

Boring for Copper.—We have before us drawings showing some interesting work done with this drill at the Ducktown Copper Mine, Tenn. The vein having been lost, the diamond drill was used to find its continuation. In the first place, a comparatively short vertical hole was put down without results, an inclined hole was then bored to a depth of 300 feet, and perpendicular, as was supposed, to the plane of the vein, and below the lowest provings. Though this hole proved some copper. its results were not considered satisfactory, so a third inclined hole was bored, commencing on the oppisite side of the outcrop of the vein. It was bored in the same vertical plane as No. 2, but intersecting it at right angles in depth. This hole was carried to a depth of 480 feet and proved the continuation of the great copper deposit in fine condition, though in an unexpected position. These provings have saved much expense, compared with the cost had the search been carried on as usual with shaftings and drifts.

Speed of Boring.—For holes not exceeding 500 feet, the average rate of speed may be counted as 20 feet per day, while for a boring of 1,000 feet an average of 10 feet per day might be considered fair work—stopages included. Of course these rates are considerably exceeded under favorable circumstances.

Cost of Boring.—Mr. OSWALD J. HEINRICH, engineer of the Midlothian Colliery, Va., has given very valuable information as to the time and cost of boring deep holes. We have published these papers in the ENGINEERING AND MINING JOURNAL, and will simply refer to our back numbers for the fullest details of the work. In our number of the 26th December we gave Mr. HEINRICH's last paper, in which he records the boring of two holes—one of 923 feet, the other, 715 feet The rate of boring was respectively 1.70 and 1.77 feet per hour, and the total progress 0.76 and 0.8 feet respectively, while the total cost, including interest wear and tear of machinery, repairs, etc., amounted to $1.46 and $0.94 per foot respectively, a single bit boring each hole without resetting.

The American Diamond Rock Boring Company, of Providence, R. I., or rather the American Diamond Drill Company, to which it is the successor, has supplied a great number of these excellent machines to mining and railroad companies in various parts of the world. We may mention a few :

The Philadelphia and Reading Coal and Iron Company, Pennsylvania.
The Lehigh Valley Railroad Company, Pennsylvania.
Pilot Knab Iron Company, Missouri.
St. Joseph Lead Mines, Missouri.
Port Henry Iron Ore Company, New York.
United States Government.
Dominion Government of Canada.
Geological Survey of Canada.
Royal Mining Direction of Prussia.
Puchoco Coal Company, Chili.
Callao, Lima and Oroya Railroad Company, Chili.
Union Consolidated Mines, Mexico.
Etc., etc.

The foreign business of the company has been quite considerable, amounting to probably $300,000.

Mechanical Separation of Coal and Slate.

WE have received from Mr. F. M. F. CAZIN, of Denver, Colorado, a letter, which we publish, with the exception of the description of Mr. CAZIN's jig, for which we refer the reader to Vol. XVI., No. 24, of THE ENGINEERING AND MINING JOURNAL, where he will find it illustrated.

The mechanical separation of slate from anthracite offers certainly a field large enough to justify Mr. CAZIN making a practical test of his machine for the purpose, and Mr. KOERNER's experience as a coal operator, with his ability as a mechanical engineer, would make him a proper person to apply the test.

Mr. CAZIN assumes that 350 tons per day would be 15 tons per hour, forgetting that the day's work at the collieries cannot be counted at more than eight or nine working hours, so that if Mr. CAZIN's jigs, with an area of 48 square feet, and requiring 6 horse-power motive force, would separate 15 tons per hour, as he suggests in his letter, it would require, say 144 square feet and 18 horse power to clean 350 tons per day.

Of course, different sizes of sieve mesh would be used for the different sizes of coal ; for stove coal, which at Mr. KOERNER's works passes over 1⅛ inch mesh and through 2¼ inch, Mr. CAZIN would use in the bottom of his jig holes of 27-16ths inch diam., and for chestnut coal, openings of 14-16ths inch diam.

One of the chief advantages of the plunger jig over the Cornish system, now being used, would be that the former does not have to lift the coal and jig at each stroke, but simply forces the water up through the coal.

A series of practical tests in the coal regions, with jigging machines of different kinds, would probably lead to the adoption of some device that would make the separation more perfect and at less cost than is now the case.—ED. E. M. J.

DENVER, Col., Dec. 1, 1874.

TO THE EDITOR—SIR : It so happened that on the same day that No. 17 of the ENGINEERING AND MINING JOURNAL, containing your valuable paper on "Mechanical Preparation of Anthracite," came to hand, I received a letter from Mr. F. KOERNER, of the Sibley Colliery, Old Forge, Luzerne County, Pa., touching the same question of mechanical separation of coal and slate.

Permit me to repeat the words of your essay, in connection with which I venture to make these few remarks, may be in the interest of those of your readers interested in lessening the waste in coal mines :

"*Mechanical Separation of Coal and Slate.*—Within the past three or four years efforts have been made, with partial success, to introduce a modification of the old Freiberg jigging machine for the separation, in water, of the slate from coal. Several mechanical separators have been tried, and though they have not as yet received any extended application, yet there can be little doubt that the work can be done in this way much more efficiently than by hand labor."

Also permit me to reproduce the passage of said letter, because it approaches the *coal washing* question in so practical a manner that no shorter statement, and none more to the point, can be produced :

"Anthracite coal is sold in six sizes—lump, steamer, broken, egg, stove, chestnut, and pea. Stove and chestnut are the sizes troubling us in cleaning ; the first passes *through* a screen mesh of 2¼ in., and *over* a mesh of 1⅛ in. ; the latter *through* a mesh of 1⅛ in., and *over* a mesh of 9-16 in. The impurities mixed with the coal coming from the mines are of two kinds—'bone' (spec. gr. 1.78), and slate (spec. gr. 2 6). (Coal, spec. gr. 1.40.—1.50.) Under a reasonably brisk demand, most of the 'bone' will pass ; such as the market is *now*, it will not.

"We mine and ship 10—17,000 tons per month, of which 25 to 35 per cent. are stove and 18 to 22 per cent. chestnut. This would give, say, 220 tons stove and 120 tons chestnut per day. Now, my dear sir, are you *certain* that your machines will separate the 'bone' and slate (together, 5 to 15 per cent.) from such a quantity of material? Will they do it well—*i. e.*, not pass slate and bone with the coal, and waste coal with the bone? Do they automatically and continuously remove the coal and impurities? How much water do your machines require? Do you use the water over again, and how?

"My great reason for preferring your machine is that you agitate the water without jigging or bobbing ½ ton of cast iron (more or less) up and down. Am I right in this? Will you answer the above questions as soon as possible? A simple, cheap, successful coal jig will have an extraordinary success in the Anthracite coal region—(we shall mine about 20,000,000 tons this year), and I should be pleased to help to make it so.

"I have given you, in the shortest way, the difficulties lying in the way, and, if you think it worth while, reply at length." F. M. F. CAZIN.

The Causes of Accidents in Mines and the Means of Preventing Them.

THE English Inspectors of Mines have excellent opportunities for studying the causes of accidents in mines and they generally discuss such subjects in their annual reports. The following extracts from these are of interest and value to our coal miners and particularly so are the remarks on the relative safety of the long wall and stoop and room system of mining:

Mr. BROUGH:—"After great explosions, sudden outbursts of gas are too often suggested as the cause of the calamity; again, doors left open, tobacco smoking, lamps tampered with, anything, in fact, except the true cause, *insufficient ventilation*. A good staff of safety officers and plenty of discipline will go far to counteract human delinquencies. As to gas, the only approach to a 'Palladium' is fresh air sweeping throughout the workings; cooling down all the pit, mixing itself up also with emanations in such manner as to render harmless every noxious thing in the colliery; but these desiderata cannot be arrived at unless the shafts, from surface to bottom, and every gallery in the mine as well, be of adequate sectional area, accompanied with vast ventilating power. It is no doubt wearisome to read this sort of statement year after year, over and over again, but inspectors' reports run in a groove, they are but the mere filling up, as it were, of printed forms. Still, the offered recommendations can never be too often repeated; every opportunity should be availed of to make them known, whether in annual or special reports. Many 'nostrums' have been recommended for the prevention of the explosion of the firedamp, but I repeat that the only remedy is an abundance of fresh air, whatever it may cost. In connection with this subject, I may add that strange theories have been surmised, more especially as regards shot firing:—One is the sudden exudation of gas from *fresh* coal faces by reason of vibratory action; or, again, vacuum following detonation, thus causing firedamp to rush out of the solid coal. I believe these views to be altogether untenable. Most likely, gas was already liberated, and the ventilation was faint. Firedamp will sometimes secrete itself where the deputy's careless safety lamp has never penetrated; then, perhaps, a chance shot is fired, and is followed by an explosion of carburetted hydrogen; flame from some of these shots is often very far reaching indeed. In coal mines where powder is used, plenty of firemen and a searching scrutiny *all around about* with the 'Davy' before the shot is fired, is the nearest approach to safety. With our present amount of knowledge, it is evident that safety lamps cannot yet be dispensed with, perhaps never will. But, in the course of time, human ingenuity will possibly lead to great improvement in them; but we cannot allow those we possess to be superseded except by one of universally acknowledged superiority. Much real ability has been exhibited in the invention of apparatus to prevent the surreptitious opening of locked lamps; but I am impressed with the opinion that the employment of strict able sub-officers, and of respectable trustworthy workmen will be found to be the best way to keep the lamps locked, better than even the most ingenious mechanical process yet discovered. There are other ways of obtaining flame for the temporary increase of illuminating power, or to light a pipe, or for anything else, besides taking the protecting gauze off. In one of our great explosions, the underviewer brought into the inquest room many thousands of matches (a sieve full) which had found hidden in different parts of the colliery."

Mr. WALES:—"In former reports I have pointed out that the timbering or propping at the faces is, almost without exception, done by the colliers themselves, who, as they are not paid according to the quantity or number of props set, but according to the quantity of coal cut and sent out, do not, I fear, pay that amount of care and attention to the propping that they ought to do, their aim being rather to cut as much coal as they can. During the time the present Act has been in operation, I have endeavored to impress upon the managers the responsibility which No. 16 General Rule throws upon them. According to the *Official Circular* (Home Office) of November 28th, 1872, 'The owner, agent, or manager may employ whomsoever they please to secure the roofs and sides, but they cannot relieve themselves from the responsibility, in case the work is not effectually done.' In examining a place, after a fall either of coal or stone has taken place, it is often impossible to say whether there has been neglect or not, and as the parties from whom you have to elicit information, either during the examination or at the inquest, are interested, the great difficulty which attends the discovery of neglect under such a system, will, I think, be obvious to all. If, as is the case in other districts, the timbering or propping were done by 'deputies' (a class of men specially engaged in setting the timber) and not by the colliers, the latter would be able to give evidence of neglect, if any had existed, or even to report it to the manager, and, if necessary, to the inspector, with a view to prevent accidents from falls of roof, etc. With such a system as this, the supervision of the whole colliery, both as regards ventilation, propping, and all other matters affecting the safety of the persons employed, would be much more efficient than under the present mode."

"Great danger always attends having two or more landings in one shaft, and wherever practicable such a plan ought to be avoided."

Mr. MOORE:—"Ventilation and falls of roof at face are the principal points where the two modes of working can differ in point of safety. As regards ventilation where large quantities of air are required, there can be no doubt that much larger quantities can be sent into workings by the stoop-and-room method than by long wall, with the same power, as the area of airways are more easily maintained than by long wall, where there is a constant creep going on. On the other hand, the current of air by the long-wall method passes more closely along the face where the men are at work. As regards safety from falls, any comparison between the two systems must take into account the thickness of seams worked, as those generally worked by the long-wall method in this district are under four feet in thickness, whereas those of greater thickness are worked by the stoop-and-room, and the loss of life in general in thin seams is not so great as in thick ones. Last year the lives lost where the mode of working was by long-wall and stoop-and-room, respectively, were as follows:—

	Long-Wall.	Stoop and Room.	Total.
"Falls of coal at face	2	6	8
" " 'stoops'	—	4	4
" of Head coal	—	2	2
" of roof at face	4	3	7
" 'brushing' at face	2	—	2
" roof at 'stoops'	—	1	1
" in roads	4	4	8
	12	20	32

"The difference is mainly in the number of deaths from falls at the face; eight deaths occurred at face where the long-wall mode of working was practiced, and sixteen where stoop-and-room. 685,695 tons of coals were raised by long-wall for every death by falls at the face, and 291,029 tons were raised by stoop-and-room. As regards safety on roads, they are more nearly equal, and this is what may be expected.

"Mid-workings are a fruitful source of accidents; their use appears to be peculiar to Scotland, and no other district seems to have so many of them, or at least, has so many accidents from their use. They are generally adopted when the seams are some fathoms separate, and where the output is small; indeed, where the output exceeds 150 tons a day from one pit, they are impracticable. Still, when coals are drawn up in cages or carriages, and in very steep seams, lying at an angle of from 55 degs. to 90 degs., as are found near Edinburgh, their application is so simple, that it is feared they will never be dispensed with, and the only thing is to make them as secure as it is possible to do, by insuring that the opening is fenced when the cage or carriage is not present. There have been many contrivances for this purpose; the best that I have yet seen is that in use at Niddrie Colliery, and the other collieries working the 'edge seams' near Edinburgh. In these collieries the seams of coal lie at an angle of from 55 to 90 degs. with the horizon, and the shafts descend from the surface in the seam. In general they are so steep that when the shaft, the hypothenuse, is 100, the base is 40, and the perpendicular is about 22. Levels or rooms, 10 ft. wide (on the slope) are driven out every 20 ft., leaving 10 ft. of a solid pillar of coal between them, and as rails are laid in each of these rooms, there are often twenty stopping places. The cage stops at each by signal. There is a wire from each room or level, which is attached to its own signal in the engine-house. These signals are small pieces of lead or iron placed against a board, and are raised up and down as required; they are placed in a row in sight of the engine-man, each one with the number of the level to which it belongs marked upon it thus:—1, 2, 3, 4, etc. The lever which works the signal lies across the entrance, and prevents any person getting to the shaft when the cage is not there. When the miner comes out with a full tub, he must raise the lever to let the tub pass, and in doing so he indicates to the engineman that he wants the cage to stop. He must keep the lever up, or the cage would not be stopped, and he does so with a bolt. When the cage does stop he puts on the full tub, draws the empty one past the lever, and drops the lever, and by one movement makes the signal to the engineman to raise the cage and bars up the entrance to the shaft. Wherever this has been applied no accident has happened from anyone falling into the shaft. In all cases the entrances to shafts should be 7 ft. high for at least 20 ft. back, and lighted with a stationary lamp, giving a light equal to at least four oil lamps."

Direct Manufacture of Steel.

IT may have been thought by some that, with the Bessemer steel process, we had seen the last startling innovation in the commercial manufacture of steel; but, according to the latest news from Vienna, we are, perhaps, on the threshold of a further startling revolution in the metallurgical processes for the production of commercial steel. It is that of "direct" production of pure steel from the ore. For many years metallurgical engineers have been endeavoring to substitute the treatment of minerals in cupola or blast furnaces by their reduction in reverberatory furnaces. All efforts hitherto attempted in Europe, or in the United States, have failed to bear any considerable fruit. It is now thought that this problem has at last been solved.

The first run of steel took place on the 27th of September last, at the iron-works of Verrières, Vienna, belonging to M. ROBERT DE BEAUCHAMP, produced by direct treatment of the ores in a reverberatory gas furnace on the Ponsard system. The inventor himself conducted the operation with the assistance of M. PERISSÉ, Director of the Société Générale de Métallurgie at Paris. The apparatus was essentially composed of a gazogène, which tranformed the "combustible" into the gaseous state; a large chamber of many compartments, in which the operations were conducted, and an apparatus in brick called the "Regenerator," which absorbed the waste heat of the furnace, and gave it back in the form of hot air. The compartments of the working chamber served successively for the reduction of the ore, for the reactions that had to be accomplished, and finally for the fusion of all the materials, so that the separation by the difference of densities should become possible.

These different phases of the operation required very different temperatures, and this is what the form of furnace is eminently suited to supply. At the charging doors farthest from the combustion chamber the furnace is only of a red heat, whilst nearer the combustion chamber the heat is so intense that one cannot look into the furnace without being dazzled. This temperature is estimated at 2,000 deg. C.

The success has been greater than was hoped for. The result obtained at Verrières showed clearly the possibility of producing steel direct from the ore, without passing through all the processes hitherto used. If the actual practical results—and we can see no insuperable impracticability in the process—should at all approximate to the above startling facts, we cannot but think that our iron-masters have been outdone on their own ground, and that this is the foreshadowing of a further great revolution in the iron trade.—*English Exchange.*

The Emma Mining Bubble.

FOR several years past the Emma Mining Company of Utah has been a byword in financial circles and a reproach to Americans. Unable to float the enterprise in this market, its promoters went abroad, and in the London market found people eager to jump at the bait. What now remains to be told is the fact that the victims in England having come to the conclusion that it was useless to waste further effort in lamentations and denunciations, have resolved upon a vigorous prosecution for the recovery of their money. In England, a petition has been filed for the purpose of winding up the Company. In this city, however, important proceedings have been instituted against the principals in the scheme. Upon the installation of the present Board of Directors, a Committee was appointed to come to this country, inspect the property, investigate the affairs of the Company, and take such action as might be necessary to secure the rights of the shareholders. Gen. GARDINER, the Chairman of the Company, and Mr. TURNER, his solicitor, undertook the investigation. They came to this country, visited the mines at Utah, and upon their return to New York, ordered SHIPMAN, BARLOW, LABOCQUE, and MACFARLAND to begin a suit against TRENOR W. PARK, Senator STEWART, of Nevada, and Gen. BAXTER, for $5,000,000, the complaint charging fraud and conspiracy.

The law firm learning that Mr. PARK, who is the President of the Panama Railroad, and the promoter or owner of a new set of mines in California, was on the point of leaving this city for California, served a summons upon him to answer, and acquired jurisdiction before he had left the city.—*N. Y. Tribune.*

THE ENGINEERING AND MINING JOURNAL.

NEW YORK, SATURDAY, JANUARY 2, 1875.

ROSSITER W. RAYMOND, Ph. D.,
RICHARD P. ROTHWELL, C. E., M. E., } Editors.

The Engineering and Mining Journal is devoted to Mining, Metallurgy and Engineering. Communications on these subjects will always be welcome.

It is the Official Organ of the American Institute of Mining Engineers, and it alone publishes the valuable papers read before that influential society.

Correspondence and general communications and books for review should be addressed to the Editors. Business communications should be addressed to the Secretary.

Remittances should always be made by Post-Office Orders or Bank Drafts, made payable to WM. VENTZ, Secretary.

Subscription $4 per annum ; $2.25 for six months, in advance.

Advertising Rates. Inside pages 25 cents per line each insertion. Outside pages 40 cents per line. Special reduced rates will be given on application for advertisements extending over a long time or occupying a large space.

The Postage on the ENGINEERING AND MINING JOURNAL, from January, 1875, will be paid at this office. We shall make no additional charge to our patrons on that account, but the subscription price will remain as heretofore, Four Dollars.

THE SCIENTIFIC PUBLISHING COMPANY.

WILLIAM VENTZ, Secretary,

P. O. Box 4404. 27 Park Place, New York.

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Our New Volume.

WITH the present number we begin the nineteenth volume of the ENGINEERING AND MINING JOURNAL, under circumstances which justify us in the expression of some self-gratulation. We think our readers will bear us witness that the volume just ended has not been inferior in interest or in value to any of its predecessors; and, judging of the future by the past, they will, we are convinced, be ready to expect and to welcome the steady improvement which we purpose.

It is no secret to the select public with which this journal has chiefly to do, that pecuniary profit has been, from the outset, a secondary object to its present owners. Indeed, if their primary purpose had been the making of money, they would have given up the enterprise long ago, since it has been sustained in past years at considerable sacrifice of labor and means. It is true that the steady support of subscribers and advertising patrons has afforded us a considerable income; but this, and more, has been expended in improving the paper itself, in the belief that such a course would lay the foundation of a sure and lasting success. We are now beginning to reap the results of the policy so perseveringly maintained; and while we are by no means exhausted of that enthusiasm which has made sacrifice easy hitherto, we may perhaps be pardoned for confessing our particular pleasure in the present and prospective financial prosperity of the JOURNAL.

Yet our pride is still in those things which cannot be so easily measured by dollars and cents. When this enterprise was inaugurated, both the professional contributors and the professional public for such a publication were in a large degree lacking. To build up such a circle of support is no instantaneous work. The contributors must be readers; the readers must be contributors; yet few will contribute till there are readers, and none will read till the contributions (editorial and otherwise) are worthy of attention. Nor can an impartial and independent journal command business support until it has acquired influence by the weight of its opinions and the nature and extent of its circulation.

We assailed this formidable problem, we venture to believe, in the truly scientific way, resolving to make with all pains, and to maintain at all costs, a center of professional information around which, in due time, all the elements of strength and progress would cluster and grow. In addition to this, we have presented, especially during the past year, a careful and elaborate digest of commercial statistics, in which the condition of great industries has been exactly mirrored.

We may say without undue vanity, and without fear of contradiction, that the extraordinary success of the American Institute of Mining Engineers has been largely due to the agency of this paper. Most of the members of that body were on our subscription-lists long ago; and, coming in contact, through the medium of our columns, with the spirit that animated their professional brethren, they readily embraced the opportunity to join their scattered forces into an associated power, the good effects of which are already felt in every quarter of the country. The very origin of the Institute, as its founders will confess, was the result of that common feeling which the endeavors of this journal had aroused among the mining engineers and metallurgists of the country; and, while we gladly acknowledge our indebtedness to that body for the important and interesting papers with which its members have enriched our pages, we do not hesitate to claim its great success as part of the fruit of our own earnest toil, a leaf of our own laurels, fairly won.

Outside of our character as the organ of the Institute, however, we maintain our independent position and ambition. We propose to continue as we have begun, and to make every step of added prosperity a step also of improvement. Our principal hindrance at present is the lack of space to present to our readers all that we wish to lay before them. This trouble has come from the enlargement of our market reports and the increase in our advertising. We have met the difficulty by frequent supplements, upon which we have put our engravings, sometimes with printed text also. But we trust, at no distant day, to supplement the supplements by a permanent increase in the size of the JOURNAL.

And so, with a New Year's greeting to all our friends, we open a fresh bottle of ink, and send herewith, by the hand of the fiend at our elbow, this first "copy" for 1875 to the printer and the press.

WE take pleasure in calling attention to the advertisement, in another column, from a practical mill-man of intelligence and experience, desiring a situation suitable to his skill and ability. Personal acquaintance with the advertiser justifies us in adding to his straightforward and business-like announcement the endorsement of our own opinion of him as trustworthy, energetic, and successful in the line of metallurgy to which he has specially devoted himself.

THE report in the *Bulletin of the Iron and Steel Association* gives very fairly a large part of the proceedings at the Philadelphia dinner to Messrs. BELL and WHITWELL. By the time the reporter got to Mr. RAYMOND'S speech, however, he had been so far bewildered by the eloquence of the evening as to manage to make nonsense out of a few very simple and direct remarks. As we have already published a *verbatim* report of what Mr. RAYMOND did say, it is perhaps superfluous to point out in the columns of the *Bulletin* what he did not say. Even those persons (if such there be) who read the *Bulletin* and do not read the ENGINEERING AND MINING JOURNAL, may be presumed to have sufficient intelligence to divine that the President of the Institute of Mining Engineers, not being an idiot, at all events, did not call that body a "Mining School." Even our friend who runs the Iron and Steel Association, though his ideas concerning the Institute are exceedingly misty, couldn't have said that about it, at ever so late an hour after dinner! And as to the grand declaration that "when 'HALLÉ' observed the transit of Venus, he did more than the astronomers of the 8th century"—we have barely breath to protest that, in spite of this strong circumstantial evidence, the orator was not tipsy—whatever was the matter with the reporter, or the proof-reader, or the editor of the *Bulletin*.

We appeal to the latter gentleman in his present, we trust, less vindictive mood, to reprint, in pity to a slaughtered reputation, the remarks of the President of the Institute, as they were truly given a fortnight ago in our columns. Perhaps, in revising the report of the banquet, our friend exhausted himself in the labor of making Mr. JOSEPH WHARTON'S extraordinary harangue seem appropriate and polite. Labor is always fatiguing that is not crowned with success. We sympathize with his condition, and tender him our own accurate version of Mr. RAYMOND'S remarks, thus offering him the enviable opportunity to do justice, without taking pains.

Exporting Ideas.

THERE is one commodity which surely finds its market, in spite of all natural or artificial obstacles. It is known under various names, such as skill, ingenuity, invention, and enterprise; but in every disguise it is simply the brain-element in labor, as distinguished from the brute-element. In many branches of American industry this element has received from the conditions surrounding it a peculiar stimulus. The demand for labor in a new country, and the comparatively high wages paid to the laborer, have set a premium upon the application of labor-saving machinery; and the liberal patent system of the United States, reinforcing with strong encouragements this pressure of economical requirements, has brought forth an amazing result. In ideas, as they are expressed in literature, we may still be less productive, or less worthily productive, than older nations; but in ideas, as they are incarnated in mechanical expedients and forms, we need not shrink from the comparison. It is true that, in this sphere also, our endeavors could be more fruitful and efficient if they were guided universally by the light of experience. We pour upon the wheel of achievement a perfect Niagara of restless inventive effort, wasting, no doubt, a vast amount of force. But the wheel turns, and the work is done.

The gradual rise in prices abroad has turned attention to the devices in which we have thus been educated to excel; and there is an increasing demand for American machinery, even in the oldest States of Europe. It behooves our inventors and manufacturers to avail themselves of whatever protection the imperfect patent systems of foreign countries can afford, and thus to secure, as far as practicable, the new and promising market which opens before them.

As will be seen in another column, a bureau has been established at Freiburg, in the very heart of the ancient mining industry of Saxony, for the purpose of furnishing mining supplies, machinery, information, advice, etc. The conductor of this enterprise, Mr. ADOLPH MEZGER, himself a graduate of the Freiburg School of Mines, has enjoyed, in addition to his thorough scientific training, a wide practical experience as a mining engineer and metallurgist, in many quarters of the world, including Germany, Russia, Greece, Mexico and the United States. Hav-

ing become acquainted in this country with the best forms of American machinery, he has already been instrumental in introducing them to the foreign public; and more than one of our manufacturers has received through him orders for complete machines—such as drills, steam-pumps, etc.—to be shipped abroad. The satisfaction which they have given to their purchasers has led Mr. MEZGER to purpose a systematic continuance of this course; and it is an evidence of his sagacity, as well as a compliment to American mechanical skill, that he now offers to act regularly as the agent, in Germany, Russia, and Austria, of American machines and processes, to take out patents for them in foreign States, and to negotiate sales with foreign purchasers. We are personally acquainted with Mr. MEZGER, and have the highest opinion of his ability and integrity. The opportunity he offers is, we understand, about to be accepted by one or two of our leading houses; and we believe they will find it productive both of fame and of profit.

WE extract from the *Bulletin of the American Iron and Steel Association* a full report of the remarks of Hon. ABRAM S. HEWITT at the recent banquet given to Messrs. BELL and WHITWELL in Philadelphia. It is scarcely necessary to say that Mr. HEWITT handles with freedom and skill a difficult subject, and presents a view of it which, while it may not gain the approbation of *doctrinaires* on either side, will win the respect of statesmen on both. For it is scientific in the best sense—a generalization, based upon induction—the practical experience of a business man, illuminated by the logic of a thoughtful student of human affairs.

Mr. President and Gentlemen: Entirely satisfied, as you must be after this bountiful repast, with all things here below, unless it be the price of iron, I am nevertheless quite sure that you would be ill content with me if I were to defer for one moment the words of welcome to our cherished guests, Mr. I. LOWTHIAN BELL, and Mr. THOMAS WHITWELL, which spring unbidden from the heart of every member of this goodly company of their fellow ironmasters, assembled to do them honor and to assure them of our profound respect and hearty good will. I will not attempt to disguise from them, as they surely will not disguise from themselves, that this assemblage is of no common character and implies no ordinary compliment. They are to-night the honored guests of the whole American iron trade, and we rejoice that this opportunity is afforded us to testify the high estimation in which they are held, and through them to acknowledge the great debt of gratitude which we, in common with all the world, owe to the land which gave them birth, for its numerous and inestimable contributions to the development of the production of iron in modern times.

We honor Mr. BELL because he has done so much to make the iron business honorable. The son of an ironmaster, he inherited a position in the trade which might have satisfied his ambition without any special effort for its improvement; but from his early youth he carefully prepared himself for the intelligent administration of a great business by scientific training at the best of schools, and by patient investigation of the principles which underlie the intricate processes of manufacture. Fortunately, perhaps, for himself and the world his career has been identified with the most marvelous growth of productive industry—that of the Cleveland iron region—of which history affords us any knowledge; and to this development he has largely contributed by his intelligence, his scientific training, and his rare powers of patient investigation. By these labors he has fairly won for himself the highest position which, in our special department of industry, can be attained by any man, that of President of the British Iron and Steel Institute, the most enlightened and powerful organization for the advancement of a purely industrial interest which any nation has yet devised. In the course of his labors he has instituted an exhaustive series of experiments upon the operations of the blast furnace and its chemical phenomena, the results of which he has embodied in an elaborate treatise, which is justly regarded as the most valuable contribution in our day made to the laws governing the smelting of iron; and leaving but litttle to be done in that direction by future investigators. While his successful acquisition of knowledge, and the practical skill with which he has applied it to useful purposes, would entitle Mr. BELL to very great and deserved distinction, to us his chief merit lies in the fact that he has not kept his acquisitions to himself, or even to his own country, but has made haste to share with all the world the useful results of his labor, thus taking himself out of the category of a mere man of business laboring for his personal advancement, and enrolling himself among the benefactors of mankind. And to Americans he has a special claim to interest, not merely that he has his home at "Washington, in the County of Durham," whence came the family of the "Father of his Country," but that he dispenses there a generous hospitality, which makes the patriotic pilgrim and the wandering ironmaster feel that they have returned to the home of their ancestors. For such deserts the welcome which we offer here to-night is indeed all too poor.

We honor Mr. WHITWELL because he, also, demonstrates the truth, which the world has come at last to admit, that the highest science is necessary to insure the greatest economy in manufacture. His careful training as a mechanical engineer undoubtedly gave him special advantages for a successful career as an ironmaster. By his energy, enterprise and willingness to test fundamental principles in practice, he has contributed in a marked degree to the cheapening of the cost of iron, and has therefore entitled himself to the thanks of all who are interested in the progress of civilization throughout the world. He is, so far as we are concerned, fortunate in having identified his name with the word "stove," which in America is always associated with the pleasant memories of "home." But his true title to the respect of mankind rests upon the fact that he has taught the world how to economize fuel, and is, therefore, a conservator of force. His benefaction is direct and positive, and the measure of it is the number of tons of coal which will annually be saved to mankind by his invention. We might even venture upon a computation of his contribution to the wealth of this continent; but I fear that the result would be a sudden conviction on our part of the inadequacy of such honors as we pay to him to-night to discharge the obligations under which he has placed the iron industry of two continents.

To such men as Mr. BELL and Mr. WHITWELL, distinguished leaders in the great army of modern industry, too much honor cannot be done; and yet, with all their personal claims to our respect and affection, it will derogate nothing from the compliment we have tried to pay them, if I say that these claims alone, strong enough as they are to open to them the home and heart of every ironmaster, would not of themselves have been sufficient to produce this collective and unique demonstration in their honor. To us they are more than members of the same fraternity: they are representative Englishmen, citizens of a country to which the iron trade may be said to owe, if not its existence, nearly all the great inventions and improvements which have enabled iron to be produced in quantity, and at a cost essential to the growth of society and progress of civilization. To Great Britain the world owes the application of mineral coal to the smelting of iron ores; the invention of the puddling process and of grooved rollers; the introduction of the hot blast; the steam hammer; the Bessemer process; the Siemens regenerative furnace; the Whitwell stove; the steam engine, locomotive and stationary; contributions which, taken away, would relegate the world to a condition of barbarism which the imagination refuses to contemplate.

We cheerfully recognize the primacy of England in the domain of industry; and we are justly proud that we belong to a race which, in the pursuit of material ends, has used them as the means of asserting the right of man to free government and of establishing social order upon the eternal principles of truth and justice. We recognize that, as in the world of industry, so in the domain of politics, she has taken no step backward, and we have learned from her history, which belongs equally to us, that every new invention introduced, and every just political principle established, improves the condition of the working classes, and adds to the fund available for their better remuneration. While we look with wonder on the mechanical and industrial achievements of Great Britain during the last hundred years, we feel that our admiration is rather due to the steady progress which has been made in bettering the condition of the working classes and to the increase of comfort which they now enjoy, as the result of a better application of the natural forces and wiser legislation based upon sound economical principles. The steady rise of wages measured by their purchasing power in Great Britain, during the last quarter of a century especially, is the most encouraging feature in the history of mankind—a very rainbow of promise to the patient sons of toil throughout the world, because, by comparing the past with the present, the beneficent influence of sound legislation on the welfare of the working classes thus becomes a matter of absolute demonstration. The abolition of the Corn Laws I regard as the turning point in the welfare of the industrial classes throughout the world, because it was a practical recognition in its most enlightened nation that the supposed interest of special classes, even when they govern, must yield before the force of public opinion, to the just claims of the governed. The immediate result of this change in British policy was, and continues to be, a very decided increase in the substantial remuneration paid for daily labor.

But an advance of wages where there is no previous training for their proper use is not necessarily a benefit; and after years of experience public sentiment in Great Britain has arrived at the conclusion that the general education of the masses is essential for their steady progress towards a higher social plane. And it seems to me that the step which has been recently taken in England towards the compulsory education of the masses, in spite of the opposition of selfish interests seeking to retain their hold upon mere muscular force, to the exclusion of mental development, will add enormously to the productive value of the workingman and enable him to secure a rate of compensation justly due to such increased value. There may be those who falsely look upon a rise of wages in Great Britain, as the result of this better training, with apprehension, and who predict that the supremacy of British industry will in consequence of the improved condition of the working classes pass away; but it is to the honor of WILLIAM E. FORSTER, whose presence here we hoped to have to-night, that with the true instinct of a statesman, such as he exhibited when he was the eloquent champion of the American Union in the time of its peril, he was able to discern in the history of British legislation in its effects upon British industry the fundamental law that labor is productive in proportion to its intelligence, and that no more certain means could be devised for perpetuating the supremacy of Great Britain over other nations than by securing for the masses of the people a better education and a higher culture.

For the same reason the establishment of the British Iron and Steel Institute marks a new era in the international history of industry. While it is true, as Mr. BELL justly remarked in his presidential address at Liege, "that art and science recognize no geographical or political boundary," it is equally true that prior to the formation of the Institute the "secrets of the trade," as they were called, were jealously guarded, and access to works where special processes were carried on was extremely difficult, and often impossible, as well to foreigners as to natives. For the first time in the history of industry, the accomplished leaders of a great trade associated themselves together, not merely for the purpose of instructing each other in their special departments, of comparing expe-

rience, and of gathering together the latest discoveries in science and art for mutual benefit, but, with a liberality never before evinced, except by scientific bodies, and which cannot be too highly commended, all the world was made free to partake of the advantages of this organization, so characteristic of the catholic spirit which happily is beginning to mark our age. The beneficial results of this wise policy are already apparent in the general introduction throughout Great Britain of the best machinery and the most economical processes, whereby the cost of producing iron has been cheapened, alike benefiting the consumer and increasing the ability to pay better wages to the operatives engaged in its production.

Not inferior in importance to the general advance in the British iron trade resulting from the establishment of the Iron and Steel Institute is the introduction and successful establishment in England of the principle of arbitration for the settlement of disputes between the employer and the employed as to rates of wages. While it can not yet be said that the disastrous consequences resulting from strikes have been altogether averted, every intelligent man now sees that their occurrence is rendered more difficult, and that the good understanding between masters and men, so indispensable to the successful conduct of business, must be greatly promoted by the discussions and evidence which the contending parties are bound to have before an impartial umpire. Arbitration not only pours oil upon the troubled waters of industry, but in fact *is* oil to the machinery of trade, keeping it in motion without jarring and stoppage from unnecessary friction. When the working classes come clearly to understand how the fund available for the payment of wages is lessened by strikes and lock-outs, they will regard them as the greatest evils of the age, and, in this and every country where they enjoy the right of suffrage, willl insist that the principle of arbitration in trade disputes shall be incorporated into the legislation of all industrial countries, and thus relieve themselves and the community from the dreadful suffering and irreparable losses resulting from any protracted stoppage of the machinery of production.

Great Britain also has the merit of having originated International Exhibitions of Industry, which, in the judgment of all intelligent men, have done more for the rapid progress of civilization than any other human agency ; and for the working classes especially have been of incalculable benefit, not merely in the enlargement of their ideas, and the development of their tastes, but in patiently gathering together the facts which affect their social condition ; the rates of wages paid in different countries ; the elementary means of education adapted to their wants ; the dwellings in which they are, as compared with those in which they should be, housed ; the varieties of food and the method of its preparation ; all of which have exerted an influence throughout Europe, and especially in Great Britain, which no lover of his race can overlook, and no statesman afford to disregard. We are now about to avail ourselves of this grand humanitarian idea in our own country, and we are glad to learn by the cable today that Great Britain will take part in our Exhibition in 1876, the result of which must be the increase of national good will and an exchange of ideas which can not fail to advance the interests of labor on both sides of the Atlantic.

In this connection there is another phase of recent industrial development in England as well as in this country which should attract the notice of all thoughtful men, in its bearing upon the question of the economy of production, and the consequent augmentation of the wages fund. I refer to the steady growth in the size and completeness of the establishments devoted to the production of iron, and, from the magnitude of the capital necessarily employed, their consequent transfer from individual to corporate ownership. Without entering into the question of the comparative advantages of these respective kinds of proprietorship, I desire to direct special attention to the facility which these corporate bodies offer for interesting the workmen directly in the ownership and the profits of the business ; which, if generally availed of, must result in the final extinction of strikes and labor disputes, and thereby largely increase the earnings of the working classes, measured not by the day, but by the life time, and improve their moral and social standing. Now, Great Britain, in her corporate manufacturing companies, such as Crossley's, and in her legislation, which makes special provision for "Partnership of Industry," has set us an example of wise foresight, which we have, I confess, been slower to follow than could have been anticipated, but possibly to be accounted for by the fact that these fine adjustments of conflicting interests are more necessary and feasible in older and more densely populated countries than in a new world like ours, where, as yet, the forces of nature have been appropriated only to a moderate extent. Nevertheless, the example is before us, and we recognize that to us Great Britain is a great free school of industry, in which have been wrought out for us without cost the wisest institutions, the most complete machinery, the best processes, and the most advanced organizations for the conduct of industry which the experience of a free and enlightened nation, overflowing with capital and energy, has been able to elaborate.

You, gentlemen, and our distinguished guests, will, I am sure, pardon this enumeration of the phases of industrial and social progress especially apparent in the British iron trade, in view of the supreme importance to us here of the question of wages, and, above all, of the ability of Great Britain to pay a steadily increasing rate of wages, an ability which she is thus surely augmenting by the discoveries of her men of science and the inventions of her mechanics, by her wise and progressive legislation, looking to the future education and moral elevation of her working classes, to the settlement of all trade disputes, and to the reconstruction of her industry on the enduring basis of practical harmony between labor and capital. Every step in this direction is a benefaction to the United States as well as to Great Britain, and drives another nail into the coffin of the international restrictive legislation ; and no one will hail with more enthusiasm than this body of American ironmasters and their distinguished guests the advent of the day when all barriers to free commercial intercourse between the nations can be safely removed, by the equalization of the wages of industry which the enlightened statesmen and scientists of Great Britain have done, and are doing, so much to bring about.

And this beneficent result can not come too soon for the interest of the world at large. Although the business of making iron is everywhere passing through a stage of great stagnation, yet its future growth can be predicted to almost the same certainty as we have learned to calculate the orbits of the heavenly bodies. In 1856, when the annual production of the world was about 7,000,000 tons, after a careful investigation, I ventured to predict that the production of iron would reach fourteen millions of tons in 1875. This limit was passed last year, when the product reached fifteen millions of tons. I do not think that I risk my character as a prophet when I indulge the belief that by the close of the present century twenty-five millions of tons per annum will be required to supply the wants of man. There are gentlemen in this room who will live to see this prediction verified, for it covers only the life of a single generation. Great Britain in 1856 furnished one-half the annual supply, and she has been able to maintain this ratio till the present time. But even Mr. BELL and Mr. WHITWELL, with all their natural confidence in the resources of the mother country, will admit they will be tasked to the utmost to keep up with the increasing demand for iron, at its inevitable rate of progress, when the total aggregate shall go beyond twenty millions of tons. Between Great Britain and ourselves, therefore, all possibility of rivalry must, in the very nature of things, soon pass away, and we shall then behold the magnificent spectacle of the two greatest and freest nations in the world co-operating together for the extinction of ignorance, pauperism and crime, and the elevation of the working classes throughout the world to that condition of comfort and intelligence to which they have a just claim, and which no political system can deny without laying the foundation of its own ruin.

We have a common language ; we inherit from England our common law and a priceless literature ; we have governments based upon the same political rights of man and the equality of all men before the law ; we have the same social customs and standards, and the same love of home and the sanctity of the family relations ; we have the same great end in view in the amelioration and enlightenment of the working classes ; and, as if to provide us with the means of the speedy accomplishment of the hopes of all good men, we have, in the main, the control of that great fund of wealth and power which has been stored up in the coal fields, and which is the key to the progress of civilization and the improvement in the condition of mankind. We are in fact but one family, endowed with the same training, occupied in the same pursuits and aspirations, and blessed with the same moral and material resources. We are working to a common end, and by the unchangeable laws of nature we can work to no other ; and hence it is impossible for any intelligent man not to see that the laws which govern production, distribution, wages and profit, must sooner or later operate with absolute equality and freedom between the two nations—if not between the continents ; and, hence, whoever is engaged in the promotion of this desirable result, whoever hastens its advent by a single day, is the benefactor of this country and should be its welcome guest.

Hence, Mr. BELL and Mr. WHITWELL, we justify to ourselves, aside from personal grounds, this exceptional demonstration in your honor. You stand here to-night as representatives of England, our motherland, fruitful now as of old in good works and good examples, ever progressive in the development and application of the eternal principles of truth and justice ; striving still as in the days of King John and Charles the First, and James the Second, to elevate the masses of the people to a better condition—foremost in the march of industry and of civilization ; and by the ties of blood and race, and in the possession of the joint estate of the coal and iron of the world, partners inseparable with us in the future benefactions to mankind which nature has put it in our power to confer.

Although commanded to speak words of "welcome," Mr. BELL and Mr. WHITWELL, I am but too well aware that they are in reality the language of "farewell." Hence I have refrained from referring to the special facts of our development in the manufacture of iron, which you have both carefully studied ; and in regard to which you will doubtless express your judgment at the proper time. We might regret, perhaps, that your visit has found us in such depression ; perhaps it may be more justly said, in the throes of a new birth ; but it has at least this advantage, that you see the old passing away and a new era of science and mechanical excellence fairly inaugurated. For the first time in our history, we have a capacity for producing iron in quantity adequate to our consumption in a normal state of affairs, and when the old are fully adjusted to the new conditions, under which alone iron can be profitably produced, you will, I am sure, agree with me in one assertion, that it is the "manifest destiny" of this country to be the seat of an iron growth on a larger scale than the world has yet witnessed.

Gentlemen, in behalf of the American Iron and Steel Association, which has honored me with this privilege, because probably more than any other of its members I have enjoyed the boundless hospitalities of the British ironmasters, I bid you "welcome and farewell," only in the hope that we shall be honored at our Centennial in 1876 with the promised presence of the British Iron and Steel Institute, of which you, Mr. BELL, were the distinguished President, and you, Mr. WHITWELL, are so eminent an associate.

COAL TRADE REVIEW.

Import Duty on Coal.

Anthracite free. *Bituminous*, per ton of 28 bushels, 80 lb. to the bushel, 75c., gold.

All *slack*, or *culm*, such as will pass through a half-inch screen, per ton of 28 bushels, 80 lb. per bushel, 40c., gold.

Not otherwise provided for, per ton, 40c. gold.

This is the only report published that gives full and accurate returns of the production of our Anthracite mines.

NEW YORK, Dec. 31, 1874.

The Production of Anthracite Coal for the week ending Dec. 26, 1874, was as follows:

Tons of 2240 lb.	WEEK. Tons.	YEAR* Tons.
Wyoming Region.		
Delaware and Hudson Canal Co	51,481	2,326,278
Delaware, Lackawanna and Western R.R	39,707	2,442 239
Pennsylvania Coal Co	26,186	1,299.339
Lehigh Valley R.R.	14,462	919,803
Pennsylvania and New York R.R	....	57,596
Central Railroad of New Jersey	36,124	1,486.020
Pennsylvania Canal	....	321,374
Sold at the mines by L. & W. C. Co	553	23.393
	168,513	8,876,042
Lehigh Region.		
Lehigh Valley R.R	58,567	3,118,441
Central Railroad of New Jersey	28,011	1,169,778
Danville, Hazleton & W. B.R.R.,	451	40 010
	87,029	4,328,229
Schuylkill Region.		
Philadelphia and Reading R.R	86,609	5,258,319
Shamokin and Lykens Valley	5,842	890,669
	92,451	6,148,988
Sullivan Region.		
Sullivan and Erie R.R	577	33,384
Total of all the regions	348,570	19,386,643

* Year beginning Jan. 1.

Production of Bituminous Coal. 1874.

Tons of 2000 lb.	10 mos.	Nov.	11 mos.
Blossburgh Region	717,418	52,336	769,754
Barclay Region	284,104	35,644	319.748
McIntyre Coal Co	126,196	6.597	132,793
Broad-Top Region	190,466	18,134	208,600
Cumberland Region	2,268,010	203,662	2,471,672
Clearfield Region	596 911	46,814	643,725
Alleghany Region	180,445	12,370	192,815
Pittsburgh Region.			
West Penn. RR	171,230	12,058	183,288
Southwest Penn. RR	6,933	388	7,321
Gas Coal, Penn. RR	770,704	61,023	831,817
Pittsburgh Coal, Penn. RR	400,139	19,087	419,226
Saw Mill Run RR	71,667	7,889	79,536
Cleveland and Pittsburgh RR.	250,856	22,349	273,205
Pittsburgh, Cincinnati and St. Louis RR	496,414	57,408	553,902
Erie and Pittsburgh RR	243,197	17,755	260,972
Pittsburgh, Fort Wayne and Chicago RR	170,772	11,638	182,410
Castle Shannon RR	92,799	12,882	105,661
A. V. & P. R.R.	293	614	907
Pittsburgh and Connellsville RR	296,105	..	..
Monongahela Nav. Co	1,848,656	..	..
Keeling & Co	147 546	7,907	155.453
Wettereal & Gormley	11,877	1,463	13,340
J. W. Carlin & Co	3,817	..	..
St. Louis Region.			
Tenn. Coal & R.R. Co	62,778	9,818	72,596
St. L. A. & T. H. R. R. Belleville Branch	154,132	12,399	166,531
B. A S. I. R.R.	85,123	12,105	97,228
Illinois and St. Louis	154,770	16,202	170,972
Indiana North and South RR	5,851	..	..
Evansville & Crawfordsville RR	13.155	3.948	17,103
Ohio & Mississippi RR	105,314	..	..
Kanawha Region.			
Chesapeake and Ohio RR	116.912	10,665	127,577
Warrior Region, Ala.			
South and North Alabama RR	23,365	..	..
Cahaba Region, Ala.			
South and North Alabama RR	3,085	..	..
S. R. & D. R.R.	12,221	1,118	13.339
Chicago B. & Q. R.R	249,178	32,773	281,951
B. & M. R.; R.R.	60,752	7,724	68,476
Union Pacific R.R. Co.'s mines	131,327	..	..
" " " other mines	81,174	..	..
Summit County R.R.	17,412	..	..
Keokuk & Des Moines R. R.	..	3,876	..
	10,623,194		

The following table does not give the entire production of our bituminous mines, but it is by far the fullest report published.

The Production of Bituminous Coal for the week ending Dec. 26, was as follows:

Tons of 2000 lb., except where otherwise designated.

	Week. Tons.	Year. Tons.
Cumberland Region, Md.		
Tons of 2240 lb.	24,896	2,294,689
Barclay Region, Pa.		
Barclay R.R. tons of 2240 lb.	6,535	299,981
Broad Top Region, Pa.		
Huntingdon & Broad Top R.R.	4.420	220,296
Clearfield, Region, Pa.		
Snow Shoe	1,155	59,811
Tyrone and Clearfield	14,460	615,681
Allegheny Region, Pa.		
Pennsylvania R.R.	3.542	200,281
Pittsburgh Region, Pa.		
West Penn. R.R.	1,865	187,572
Southwest Penn. R.R.	26	7 447
Penn. and Westmoreland gas coal, Pa. R.R.	19,055	870,519
Pennsylvania R.R.	5,832	432,257
Kanawha Region, W. Va. to Dec. 12.		
Chesapeake and Ohio R.R.	3,418	131,892
Shipments from *Block House Region, N. S.*, to Dec. 11.		
Consigned to the Provinces, tons 2240 lb	713	15.028
" " " United States " " "	....	15,486
" " Cuba " " "	520	1,611

The Production of Coke for the week ending Dec. 19.

Tons of 2000 lb.

	Tons.	Year. Tons.
Tyrone and Clearfield	38	796
Alleghany Region	....	118
West Penn. R.R., " " " "	1,466	43.502
Southwest Penn. R.R " " " "	8,894	409,243
Gas Coal, Penn. R.R. " " " "	950	39,410
Pittsburgh Coal, Penn. R.R. " " "	1,572	64,609

There has been no movement worthy of notice in either anthracite and bituminous coals since our last review—Christmas and the mild weather having taken away all demand, and we shall occupy our usual space this week with a review of the year's business.

The representatives of the combined companies met in this city on Tuesday, and finally decided to make a general reduction of wages, which will also equalize the wages in the various districts. This will throw a heavy reduction on the Schuylkill and Lehigh regions. We were unable to learn the basis of the reduction, and at the present writing cannot say what action the miners will be likely to take. If a reduction of 15 per cent, is made in the Wyoming region and the wages in the Lehigh and Schuylkill regions are brought down to the same basis, the miners in the two latter regions will probably not submit to it, and the result will be a strike, while in the former region, work would probably be continued, so that consumers will receive an abundant supply until the labor question is finally adjusted. The Pennsylvania Coal Company was not represented at the above mentioned meeting, and upon the whole, with the existing stocks, consumers need hardly anticipate being unable to procure supplies, should they require them.

In the Scranton sale yesterday the following prices were obtained. We compare them with the Programme prices for December.

	Tons.	Average price.	Programme price for Dec.
Broken	8,000	$5 24½	5 75
Egg	5,000	5 26	5 90
Stove	10,000	6 03	6 40
Chestnut	7 000	4 88	5 35
	30,000	5 43	

The following are extracts from letters arriving by the South American and West Indian mails which came to hand after we went to press last week:

Pernambuco, Nov. 30.—Stocks rapidly accumulating and prices will probably decline; recent arrivals have been 645 tons Cardiff sold at 20$700 (about $11 00 gold) an outside price and not likely to be duplicated; a cargo of 662 tons Pictou coal per *Elie D* sold on private terms.

Bahia, Nov 28.—Market has fluctuated the past month. Cargo of Cardiff on the spot realized 26$000 (about $13 50 gold) while the best offer obtainable for a cargo of Scotch now due was 18$000.

Buenos Ayres, Nov. 10—Coal.—Heavy importations and shipments from Cardiff for this market continue large. September exports 25,000 tons; market weak and prices nominal; last sale here at $15; at Montevideo $12½. House coal abundant.

Barbadoes, Dec. 11.—Last sale Pictou coal per *Osage* at $7 70 gold per ton, deliverable at Demerara; market only fairly supplied—prices well sustained.

Havana, Dec. 18.—No change in coal quotation; supplies large, with heavy shipments on the way from England.

St. Thomas, Dec. 11.—The recent arrivals of Cape Breton coal have all been ordered to neighboring ports, this market being over-stocked, with but little prospect of improvement at present.

Rio de Janeiro, Nov. 24.—Receipts for the month to date 8300 tons Cardiff, 1300 tons Newcastle—mostly to dealers—a cargo of 886 tons of Cumberland coal is now on the way to this port from Baltimore.

Wholesale Prices of Anthracite Coal for Dec. f.o.b. at the Tide Water Shipping Ports per ton of 2240 lb.

	Lump.	Steamer.	Grate.	Egg.	Stove.	Chestnut.
Wyoming Coals.						
†Lackawanna and Scranton at Elizabethport & Hoboken	5 55	5 65	5 75	5 90	6 40	5 35
*Pittston at Weehawken	4 75	4 75	4 85	4 95	5 35	4 50
*Wilkesbarre at Port Johnston	5 55	5 65	5 75	5 90	6 40	5 35
Plymouth, R. A	....	....	5 75	5 90	6 50	5 35
Susque. Coal Co. at Amboy W.A.	5 55	5 65	5 75	5 90	6 50	5 35
Kingston at Hoboken	5 55	5 65	5 75	5 90	6 40	5 35
***Lehigh Coals.**						
Old Company at Port Johnston	6 50	....	6 45	6 45	6 60	5 65
Old Company's Room Run "	6 00	....	6 00	6 00	6 35	5 35
Sugar Loaf at "	6 00	....	6 45	6 45	6 60	5 65
Lehigh Coal Exchange "	6 35	....	6 30	6 30	6 45	5 50
Honey Brook at Elizabethport	6 35	....	6 30	6 30	6 45	5 50
Spring Mt. C. Co. at Hoboken	6 35	....	6 30	6 30	6 45	5 50
Beaver Meadow at South Amboy	6 35	....	6 30	6 30	6 45	5 50
Schuylkill Coals at Port Richmond.						
Schuylkill white ash	5 05	5 15	5 25	5 40	5 90	4 45
Schuylkill red ash	....	....	5 40	5 50	5 95	4 55
Shamokin white and red ash	....	....	....	5 40	5 90	4 45
N. Franklin	....	....	5 85	5 85	5 90	4 45
Lorberry	....	....	6 20	6 20	6 20	4 80
Lykens Valley	....	....	....	6 85	6 85	5 40

* Small or Pea coal is quoted by these Companies at $1 35 per ton less than Chestnut.

† f.o. b. in New York Harbor.

Pittston coal is delivered to carts in New York or Brooklyn at an additional charge of 40 cents per ton to the above quotations.

	Per ton.
Freight from Hoboken and Weehawken to New York	40c.
" " Elizabethport & Port Johnston to New York	40c.
" " South Amboy to New York	45c.
" " Port Richmond, "Phila." to N. Y. alongside	95c.
" " Rondout to New York by boat or barges of the D. & H. Canal Co. "delivered"	50 c.

Wholesale Prices of Bituminous Coal.

Domestic Gas Coals.

Per ton of 2240 lb.	Shipping Ports.	At the Alongside in New York.
Westmoreland and Penn, at Greenwich, Philadelphia	$6 25	$7 65
" " at S. Amboy	7 00	..
Red Bank Cannel Pa., at Phil.	8 50	8 50
" " at S. Amboy	8 00	....
" Orrel, "	7 00	7 65
" " at Philadelphia	6 25	....
Youghiogheny, Waverly Co, at Baltimore	6 00	7 65
Despard, West Va., "	5 60	7 40
Murphy Run, W. Va. at Baltimore	5 60	7 40
Fairmount, W. Va "	5 60	7 40
Newburgh Orrel, Md. "	5 50	7 40
Cannelton Cannel, W. Va., at Richmond	11 00	12 80
" Splint, " "	5 25	7 50
Peytona Cannel, " "	....	12 50
Sterling " Ohio	....	12 00
Straitsville, " At Sandusky, O	3 65	11 50

Foreign Gas Coals.

	Sterling.	Am. cur'cy.
Newcastle, at Newcastle-on-Tyne	12/@13/6	7 00@ 8 00
Liverpool House Orrel, at Liverpool	29/	13 00
Ince Hall Cannel "	52/	18 00
" Gas Cannel "	40/	15 00
Scotch Gas Cannel, at Glasgow, nominal.	28/	9 50
	Gold.	
Block House, at Cow Bay, N.S.	2 25	6 50
Caledonia, at Port Caledonia	1 87½	5 70
Glace Bay, at Glace Bay	2 00	5 50
Lingan, at Lingan Bay	2 25	6 50
Sydney, International and Reserve mines, at Sydney	2 25	5 75
Pictou, Albion and Vale mines, at Pictou	2 50	6 50

Steam and House Coals.

Broad Top, at the mine, $1 25; at Port Richmond, Phil	4 75@5 00	6 00@6 25
Cumberland, at Georgetown and Alexandria, Va	4 30@4 40	5 75@6 00
Cumberland at Baltimore	4 60@4 75	[6 25@6 50
Clearfield, "Derby," "Kitanning" and "Sterling," at the mines, $1 25; at Greenwich, Phil	4 75@5 00	6 25
James River, carbonite, at Richmond, Va	6 75	9 00
" bituminous, "	4 00	6 25

Retail Prices in New York.

Anthracite.

Per 2000 lb.	Grate and Egg.	Stove.	Chestnut.
Pittston coal, in yard	$6 00	$6 20	$5 40
Lackawanna Coal delivered	7 60	7 85	7 10
Wilkes-Barre, delivered	7 60	7 85	7 10
Lehigh & Locust Mountain, del'd	8 00	8 00	7 50
Schuylkill Red Ash del'd	8 25		

The cost of delivering Pittston coal ranges from 40 cents to $1 per ton, according to distance from the yard.

Bituminous.

Liverpool House Orrel, delivered, per ton of 2000 lb	$23 00
Liverpool House Cannel " " "	25 00
American Cannel " " "	16 00
American Orrel " " "	16 00
Straitsville Cannel " " "	16 00
Carbonite " " "	12 00
Cumberland " " "	9 00

Baltimore, Md. Dec. 30, 1874.

Reported by our Special Correspondent.

WHOLESALE PRICES PER 2240 lb.

ANTHRACITE.

	By cargoes.	In cars.
Wilkes-Barre, "Lee," or "Diamond,"		
Lump, steamboat	$5 15	$5 60
Broken	5 50	5 73
Egg	5 87	6 15
Stove	6 07	6 35
Pittston and Plymouth.		
Lump and steamboat	....	5 50
Broken	....	5 70
Egg	....	6 05
Stove	....	6 25
"Boston," freeburning white ash	....	5 50
Egg	5 87	5 70
Stove	6 07	6 05
Shamokin, (red or white ash)	....	6 25
Egg	5 82	6 05
Stove	5 92	6 15
Lykens Valley, red ash, egg and stove	6 02	6 35

From wharf or yard, wholesale, 50@75c. additional, By retail, all kinds and sizes, per 2,240 lb, $7@8 25.

BITUMINOUS.

George's Creek and Cumberland f. o. b. at Locust Point for cargoes	4 60	4 75
West Va. Gas Coal f. o. b. at Locust Point	5 50	....
Kanawha Cannel, coarse	13 00	....
Tyrone	7 25	....
Ritchie Mineral of West Virginia	1 00	....

Boston.

From the *Commercial Bulletin* of Dec. 26, 1874.

Pig continues to hold along in a listless request, having very little business, evidently indifferent to very large sales at present prices, and yet somewhat anxious to secure a trade. The drop to $25 at Hoboken of A No. 1, as last noted, has checked a number of brands here in their saggy condition, and they hold nominally strong for $28. One or two dealers who have been quoting the lowest point in the market for some months have advanced their card prices; but what has been done on actual sales does not clearly transpire. Lots on the wharf to cash customers can be found at $27 50, but the buyer who approaches for this value must, beyond a doubt, mean business.

Reported by our special correspondent.

CARGO PRICES TO TRADE.

Lingan coal	$ 5 75	Westmoreland, and Penn.	7 75
Caledonia	5 00	Waverly Co. Youghiogh'y	7 75
Pictou	6 15	Cannelton Cannel	13 50
Block House	5 60	Cumberland	6 10
Red Bank Cannel	10 00	Anthracite, .6 50@	7 25
Glace Bay	5 00	" Retail..7 50@	8 00
Sydney	7 00		

Buffalo, N. Y. Dec. 30, 1874.

Per ton of 2000 lb.

	Slack.	Nut & Slack.	Nut.	Lump
Connelsville coke				6 50
Sterling cannel				6 00
Red Bank				5 75
Youghiogheny coal for gas				5 50
Briar Hill coal		3 25		5 00
Fairmount "		3 25	3 75	4 25
Catfish "		3 25	3 75	4 25
Stoneboro "	2 75		3 75	

Briar Hill coal, and Stirling and Red Bank cannels retail at $7 50; all other coals $1 per ton above wholesale prices.

Anthracite f. o. b. vessel.

Grate	6 70
Egg	6 70
Stove	7 15
Chestnut	6 65

Retail prices delivered and screened, $1 per ton additional

Chicago, Ill. Dec. 29, 1874.

Specially reported by Messrs. RENO & LITTLE, Coal Merchants.

No change in prices of coal. Anthracite firm. Bituminous by cars abundant and weak.

Retail prices per ton of 2000 lb. delivered to buyer.

		BITUMINOUS.	
Lehigh Lump	$10 75	Briar Hill and Erie	7 50@
Lehigh prepared and car load lots	10 25	Walnut Hill (W. Va.)	50@
Lackawanna, Wilkes-Barre and Pittston,*		Midway (West Va.)	6 50@
Grate, egg, and chestnut	9 50	Cannel	8 00@ 9 00
Stove or range	10 00	Blossburg	8 00
		Indiana Block	6 00
		Hocking " Brooks"	6 00
		Wilmington and Illinois	5 00

*75 cents off these prices for car load lots to country dealers and manufacturers.

Cleveland, O. Dec. 30, 1874.

Reported by our Special Correspondent.

Per ton of 2000 lb. on cars.

Youghiogheny, l'p	$4 40	Columbiana	$3 00
Youghiogheny, nut	3 40	Strip Vein	3 20
Briar Hill, according to quality	$3 85 to 4 00	Mountain Blossburg (blacksmith)	5 50
Massilon	3 65	American Cannel Coal Co.s	
Hocking Valley	3 25	Cannel	4 50
Straitsville	3 25		

Anthracite, Lackawanna on cars, Egg $6 85
" " " " Stove 7 50
" " " " Chestnut 7 00
Youghiogheny Coke, " " here 5 25
Connellsville " " " 5 50

50 to 75 cents per ton additional for delivery at retail.

Cincinnati, O. Dec. 30, 1874.

Per ton of 2000 lb.

	Bush.	Ton.
Youghiogheny, or Pittsburgh, afloat	10 c.	—
Pomeroy coal	7@8 c.	—
Cannel coal	18c.	—
Semi Cannel	11 c.	—

The following are retail prices delivered:

Youghiogheny	13 c.	
Pomeroy	11 c.	
Cannel	24 c.	—
Kanawha Semi Cannel	15c.	—
Anthracite		$9 00@10 00
Foundry coke	10c.	—
Soft coke	8c.	—

Detroit, Mich. Dec. 30, 1874.

Specially reported by Messrs. ROBINSON & KEYS, dealers in all kinds of coal.

Please continue quotations as last reported. Trade continues dull, and the weather warm. We might almost say that the fuel market is dead for the time being.

Per ton of 2000 lb.

Lehigh Lump, per ton	$10 50	Blossburg	8 50
Lehigh " prep. sizes	10 00	Briar Hill	7 50
Wilkes-Barre, Grate and Egg	9 00	Willow Bank	7 00
Wilkes-Barre, Stove and Nut	9 50	Erie	7 00
		Massillon	7 00

Erie, Pa. Dec. 30, 1874.

Reported by our Special Correspondent.

Wholesale, per ton of 2,000 lb.

Bituminous f.o.b.

Briar Hill lump $4 00 | Beaver lump $4 00

Indianapolis, Ind. Dec. 21, 1874.

Specially reported by Messrs. H. McCOY & Co.

Per ton of 2000 lb.

BITUMINOUS.

Wholesale on board cars in city.

Block coal	$2 50@$2 75	Indiana cannel	6 75
Best "	2 40@ 2 50	Hocking Valley	4 25
Block Nut, per car	18 00	Youghiogheny	5 00
Highland " "	18 00	Blossburg (smithing)	6 50
Block slack, per car load		Piedmont "	7 75
Peytona, cannel per ton	8 75	Gas coke, per bushel	8c

ANTHRACITE (Lackawanna).

Grate	$8 70	Chestnut	8 60
Egg	8 70	Stove	8 85

Retail, per bushel of 70 lb.

Block	16c.	Peytona Cannel	320.
Highland	14	Indiana "	26
Highland Nut, dom. use	9	Youghiogheny	24
Block " "	9	Blossburg	26
Slack, steam, "	8	Piedmont	30
Block & Highl'd Mt. steam—			

ANTHRACITE.

	per ton.		per ton.
Grate	$11 00	Stove	$11 00
Egg	11 00	Chestnut	11 00

Louisville, Ky. Dec. 29, 1874.

Specially reported by Messrs. BYRNE & SPEED.

Please report our market the same as last week, but with a tendency to lower prices, both wholesale and retail.

Pittsburgh, per load of 1900 lb.	$3 50
Pomeroy	
Buckeye Cannel	5 00
Peytona Cannel	5 75
Nut and Slack	2 50
Kentucky lump, per load	
" nut, "	
" Slack "	
City-made Coke, per bushel	10c
Kentucky on cars at wholesale, per bush.	9c
Anthracite, per ton	$10 to $10 50

Milwaukee, Wis. Dec. 27, 1874.

Specially reported by Messrs. R. P. ELMORE & Co.

Retail prices per ton of 2000 lb.

Lehigh Lump	$10 00	Briar Hill, select	$8 50
Lehigh Prepared	10 50	Blossburg	8 00
Lackawanna	9 50	Pittsburgh	7 50

New Orleans, La. Dec. 26, 1874.

Market dull with a good supply. We quote:

Pittsburgh coal, retail, per bbl	75c
" wholesale	40c.
" to steamboats, per box	60c.
" to manufacturers, per bbl	65c.
" shipments per hhd	$7 00
Anthracite, retail, per ton	$12 50
" wholesale per ton	$8 50
Spadra (Arkansas) coal, retail, per bbl	75c.
Mt. Carbon, wholesale, per bbl	45c.
" " retail per bbl	65c.
Virginia Cannel, per bbl	90c.
Scotch Cannel, per bbl	1 00

Pittsburgh, Pa. Dec. 28, 1874.

Reported by our Special Correspondent.

Per ton of 2000 lb. and Bushel of 76 lb.

	per ton.		per ton
Youghiogheny coal	$2 00	Pittsburgh retail delivered per bushel	9c@10c
" coke	2 50		
Connellsville coal	2 10	Anth'cite on cars Lehigh	$7 75
" coke	2 75	" " Wilkes-Barre	6 75
Pittsburgh coal	1 85		

Twenty-five to fifty cents per ton additional for delivery.

St. Louis, Mo. Dec. 28, 1874.

Specially Reported by the COLLINSVILLE COAL AND MINING COMPANY.

ANTHRACITE.

Per ton of 2000 lb.

	City delivery.
Lehigh Lump	$13 50
Lackawanna and Wilkesbarre	12 50
Semi Anthracite	9 50

BITUMINOUS.

Per ton of 2000 lb.

	E. St. Louis.	City delivery
Washington Indiana—smithing	$4 00	$4 87
O'Fallon, Ills	2 00	3 00
Collinsville and Belleville, Ills	1 75	2 75
Indiana Cannel	6 00	7 00
Missouri Cannel		5 00

Retail, 25c. per ton additional.

San Francisco.

From the *Commercial Herald* of Dec. 17.

Imports for the week embrace the following: 1,824 tons per *Idom ne*, from Liverpool, and 400 tons Seattle per *Lovet Peacock*. The market is strong for all descriptions, although the free and increased coast supplies have a tendency to check any considerable rise in values. In addition to the foregoing we are in daily receipt of Black Diamond and other Mt. Diablo mines; also, Coos Bay, Bellingham Bay, and Nanaimo, by regular collier packets. The house demand draws heavy upon these latter descriptions of Bituminous, Wellington, Seattle, Coos Bay, etc. We quote Australian spot cargoes at $11@11 25; Cumberland, $15@18; Wellington screened, $11@11 50; Nanaimo, same; Bellingham Bay, $8 50. The *Oakworth* is at hand from Newcastle, N. S. W., with 1,692 tons; the ship *Borrowdale* with 1,700 tons from Newcastle, N. S. W.; and *Amie* with 905 tons from Departure Bay.

Toledo, Ohio. Dec. 28, 1874.

Specially reported by Messrs. GOSLINE & BARBOUR.

Per ton of 2000 lb.

	Retail.		Retail.
Wilkes-Barre and Scranton, Large and Small Egg	$8 35	BITUMINOUS. Blossb'g and Cumberl'd	$8 00
Stove	8 50	Massillon Lump	6 00
Chestnut	8 35	Briar Hill	7 00
Lehigh Lump	10 00	Straitsville	3 75
		Hocking Valley	4 00

Soft coal screened retails from $4 00 to $6 00, according to quality.

Montreal. Dec. 30, 1874.

Reported by our Special Correspondent.

Per ton of 2,240 lb.

Scotch Steam	$4 50@4 75	Cape Breton Steam	$4 00
Pictou "	4 25	Newcastle Smiths	5 50

Anthracite at retail, 2,000 lb., delivered, less 5 per cent.

Egg	$8 00	Nut	$8 00
Stove	8 50	Chestnut	7 75

Halifax, N. S. Dec. 28, 1874.

Reported by our Special Correspondent.

Prices of coal continue the same as last anvised you. There are no arrivals, as the market is well supplied, and the season may virtually be considered as closed.

Prices per ton of 2240 lb. in gold.

Sydney (old mines)	$4 50	Little Glace Bay	3 50
Gowrie	3 50	Blockhouse	4 00
Victoria	3 50	Albion (at Railroad)	4 25

Toronto, Ont. Dec. 28, 1874.

Reported by our Special Correspondent.

ANTHRACITE.

	per ton.		per ton.
Broken	$7 65	Chestnut	$7 65
Egg	7 65	Lehigh	9 00
Stove	8 15		

BITUMINOUS.

Blossburgh	7 50	Screenings	5 00
Briar Hill	7 00	Soft Nut	5 50

ANNUAL COAL REVIEW.

NEW YORK, Dec. 31, 1874.

Anthracite.—Our report of the production of anthracite coal, exclusive of what has been used at the mines, amounted to 19,386,643 tons on the 19th inst., and estimating the balance of the year, we may place the total in round numbers at 20,000,000 tons. The coal statistics of previous years, published by different coal papers, have been rather unreliable, and we are unable to make a comparison that can be relied upon. We, however, estimate the decrease this year at 1,000,000 tons or 5 per cent., which, with all the facts considered, is a very satisfactory exhibit.

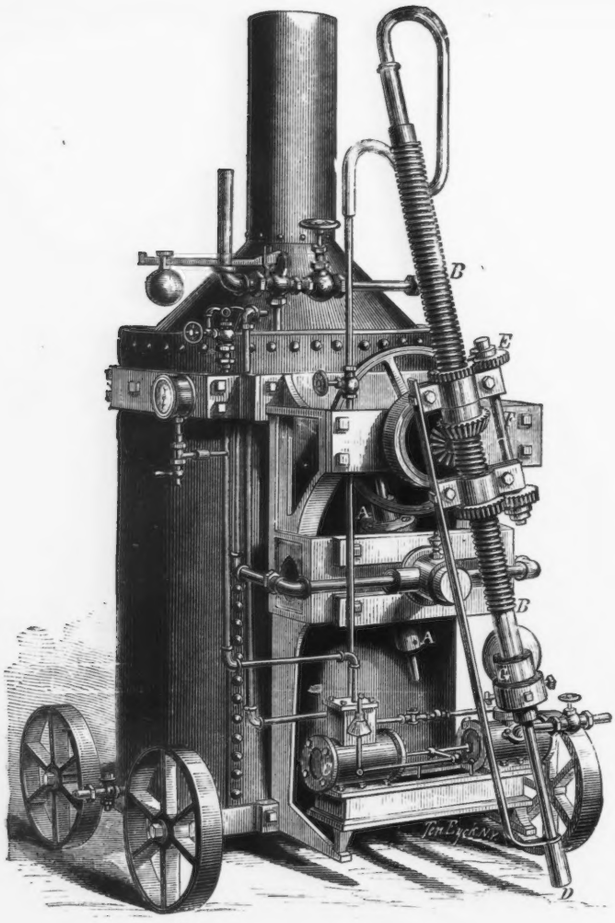
The year opened up with mild weather, which continued through the winter, very much to the detriment of the trade in domestic sizes. The stocks at the beginning of the year were large, and prices were considerably shaded. In the latter part of January, a somewhat better demand was brought about by talk of a strike, which, however, did not occur. On the 21st of January, the combined companies adopted a programme for the year's business, a copy of which was published in our issue of February 7. Season contracts began to be made rather largely in February, and continued to be made up to the 1st day of April, at a price 20c. below the average of the season; so that, by that time, some of the companies had contracted to deliver their whole anticipated production. Meanwhile, business had settled in the quiet channel which it held during the latter part of the year, and by June we heard of undercutting in prices, said to have come from contractors having coal under demurrage; but at the same time some of the leading companies were accused of doing the same. Upon the whole, prices were fairly maintained until October, when it again began to be rumored that they were being cut, and from that time on they have been very irregular, so that at this date it is impossible to say at how low a figure coal can be purchased. As before remarked, the bulk of the sales were made early in the year, and later business was mostly confined to the latter part of each month, buyers having awaited the announcement of an advance by the combination, before making their purchases.

The first of November found consumers and dealers very well stocked, with large quantities at the various shipping ports, and in the hands of contractors who had purchased at rates about 75c. a ton under the prevailing prices. With the exceeding dullness of trade, and prospects of carrying their coal until next season, the contractors made a bold effort to dispose of their stocks without regard to profits. The Pennsylvania Coal Company has been opposed to the season contract policy, and immediately reduced prices to compete with them. This, of course, with the limited demand, had a tendency to throw out of the market those who had an inclination to sustain prices, and, as might be expected, a general break took place. The advance, with those who sustained prices, was one dollar from March 1st to November 30, or in strict accordance with the programme as laid out in the early part of the year.

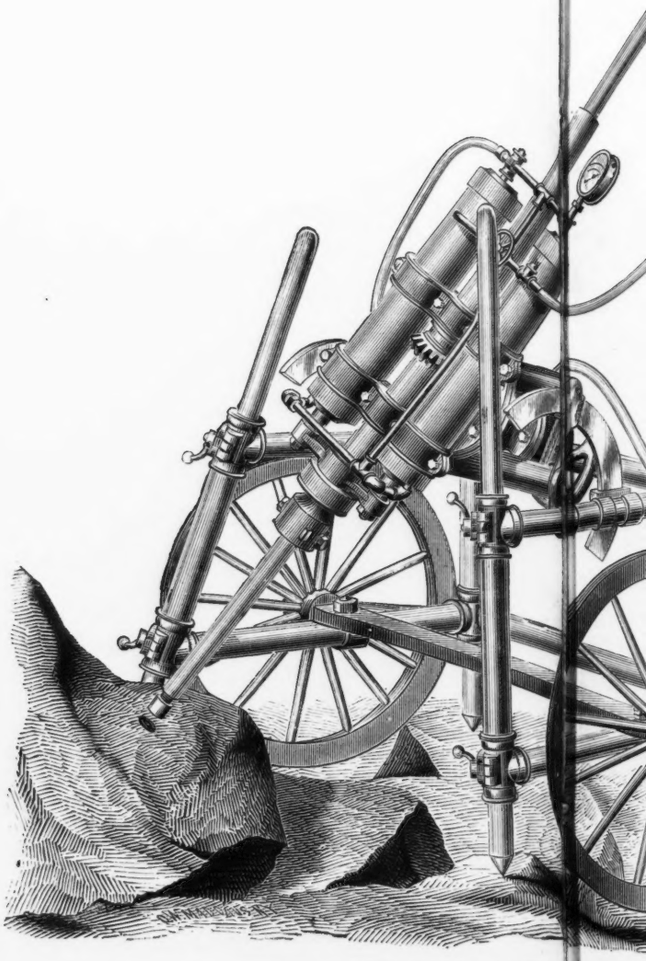
There are few branches of business that can show so good a record for the year under review as the coal business. As before remarked, the amount marketed is within 5 per cent. of the business of 1873, and but little under that of 1872. Trade has appeared dull, not so much from a decrease in the demand as in an increase in the facilities for producing. The ratio at which the demand for coal has increased during the past ten years, has shown the mining companies that considerable developments were necessary to meet the wants of consumers, and many shafts and slopes that were under way at the time of the panic have since been completed; this, and the fact that a large number of men heretofore employed in the mines as laborers, have learned the art of mining, has placed the producing capacity far ahead of the present consumption. The result has been that the collieries have worked the greater portion of the year upon short time. New developments have, to a great extent, been discontinued for the time being; but, with the record of the past year before us, if the coal and transportation companies adopt a liberal policy to assist the revival of the iron and other industries, by making a fair reduction in the price of coal and in transportation, we may reasonably expect and predict a demand during the coming year of 1875, that, if it does not meet their ability to produce will, at least, considerably exceed the output of the year just past. There are none who do not acknowledge, that had the demand been nearer the ability to produce, this year's business would have been exceedingly profitable; as it is, the companies have probably done better than in any previous year, for prices have been high and a strict economy has been exercised at the mines.

The general decline in values, and the stagnation in every branch of productive industry, has naturally caused a reduction in wages throughout the country, with the single exception of the anthracite mines. The combined companies have now agreed upon a reduction there, probably to the extent of at least 15 per cent. If the Combination were to allow the consumer a fair share in this reduction and in the reduced cost of transportation, it would encourage consumption, and assist in bringing about that revival in business all so ardently desire.

It is but reasonable to anticipate considerable improvement in nearly all branches of business before another year has passed, but none appear able to judge the force of the blow received

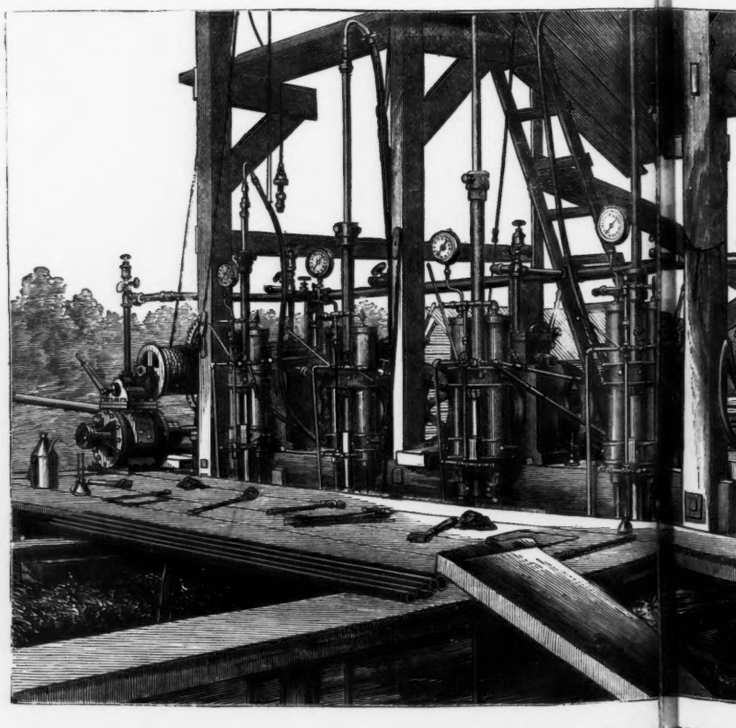


PROSPECTING DRILL.



OPEN CUT OR QUARRY DRILL.

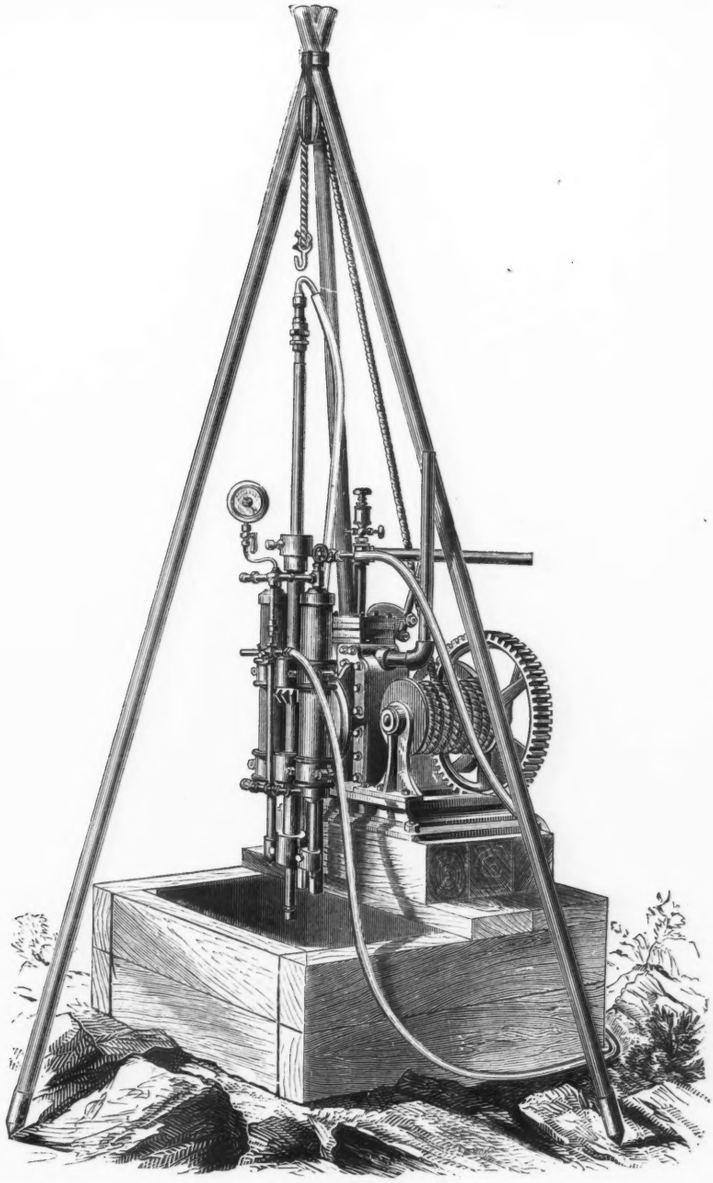
TUNNEL DRILL.



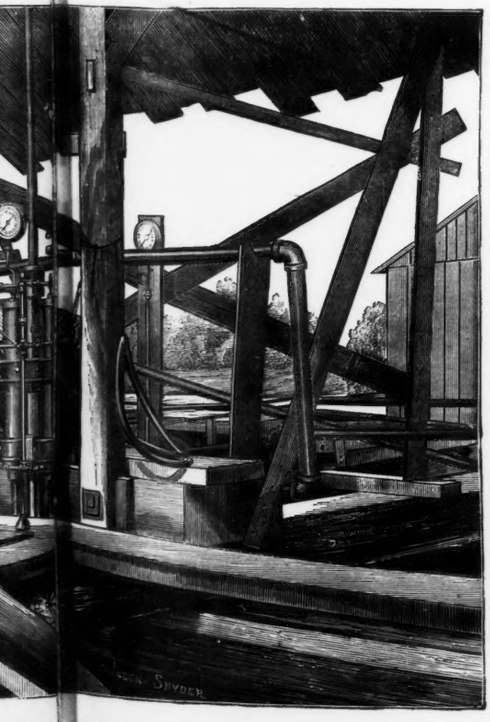
SHAFT SINKING BY THE LONG-HOLE PROCESS

AMERICAN DIAMOND ROCK BORING CO., (Successors to the American

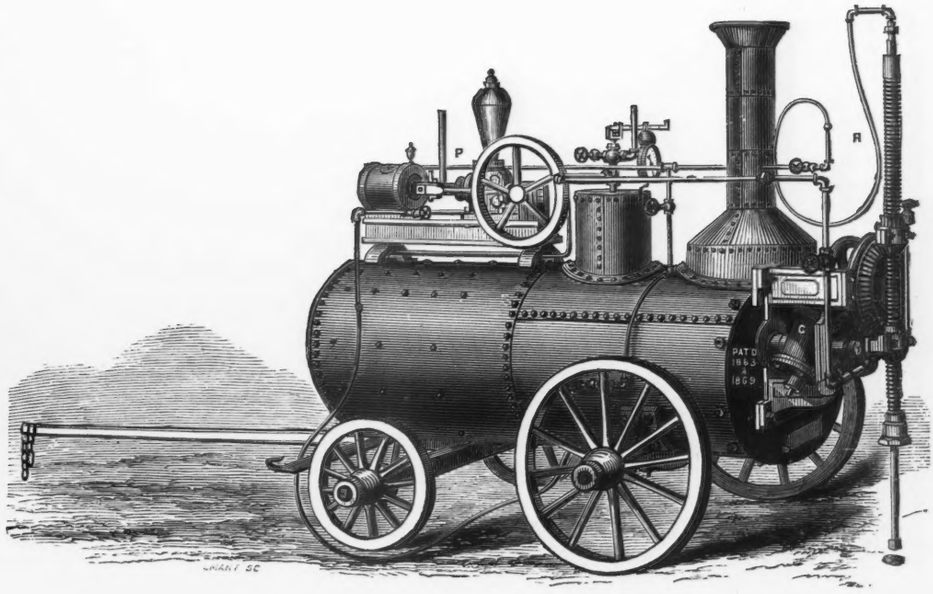
ARRY DRILL.



SHAFTING DRILL.



LONG-HOLE PROCESS.



WELL BORING DRILL.

little more than a year ago, and it is more than likely that sanguine minds will be disappointed in the reaction. However, what may not be considered a remarkable improvement in the general business of the country, will mean much with the anthracite coal business.

Several serious fires have occurred at the mines during the year. The first was at the Kidder Slope of the Lehigh and Wilkesbarre Coal Co., the second at the Baltimore Mine of the Delaware and Hudson Canal Co., and the third at the Prospect Shaft of the Lehigh and Luzerne Coal and Iron Co. The cost of extinguishing the two former is estimated in the aggregate at about $1,000,000, while the latter was not so serious, although it became necessary to flood the mine. The two former, as well as many other fires during the last five years, were caused by the fires of underground boilers. *Accidents* of this class have undoubtedly added greatly to the cost of production of coal, and it is satisfactory to note that the knowledge so dearly bought is being applied to the adoption of such measures as dispense altogether with the use of fires underground.

Coastwise freights have ruled exceedingly low; as low as $1 per ton having been obtained from Elizabethport to Boston. The closing rate is about $1 30.

In our issue of December 26, we published a very interesting statement, showing the amount of coal shipped to tide-water during the season of 1874, as compared with 1873. In February and March, the allotments were made upon the 10,000,000 tons basis; in April it became necessary to reduce the shipments 15 per cent., which was also continued through May; in June they were reduced 25 per cent., but in July the 10,000,000 basis was again reached, which resulted in a decrease of 50 per cent. for the month of August. In September the original allotment was reached; in October it was decreased 25 per cent., and in November placed at the 10,000,000 tons basis. The original allotments of the whole quantity to be shipped, as distributed through the months, were as follows: February, 2.8 per cent.; March, 6.2; April, 10; May, 12.65; June, 12.60; July, 11.05; August. 12.10; September, 11.95; October, 11.80; and November, 8.85 per cent. The amended quotas were 1,491,750 tons less than the original, or about 15 per cent. The actual shipments were 1,751,072 tons, or about 17½ per cent. less than the original quotas, and 259,332 tons or about 3 per cent. less, than the amended quotas. It will be observed that from some cause the Philadelphia and Reading RR. Co. fell short in its shipments, from its amended quota 232,282 tons; the Delaware and Hudson Canal Company, 101,702; the Lehigh Valley RR. Company, 664, and the Delaware, Lackawanna and Western Railroad Co., 98,681 tons, while the Lehigh and Wilkesbarre Coal Company made shipments of 10,721 tons beyond its quota, and the Pennsylvania Coal Co., 163,288 tons beyond its allowance. The Pennsylvania Coal Company was not bound to the association in matters relating either to the production or prices, hence its ability to dispose of the quantity in excess.

The Anthracite coal combination exists in apparent harmony, and there is every indication of its continuation during the coming year. Although the programme of next year has not been made known, yet it is supposed that the prominent errors of the year under review will be avoided, and we are likely to see more settled prices; and so far as the policy has been expressed, lower ones—by probably 50 cents per ton. A general reduction of wages was agreed upon on the 29th, inst., which will also equalize the wages of the several districts. This has become a most necessary step, and it is to be hoped that it will be sufficiently great to permit a marked reduction in the price of coal It may possibly result in a strike in one or two of the regions, but if so, it will likely be settled before there can be a pressing demand for coal, and consumers are not likely to find a lack of supplies or have exorbitant prices imposed upon them.

The amount of coal sold at auction by the Delaware, Lackawanna and Western R. R. Co., during the year, was 570,000 tons. This amount was so small that the combined companies were able to keep the price nearly, though not quite, up to the programme standard. There appears but little dissent from the opinion that the coal offered at these auction sales is purchased in the interest of the Combination, and the fact that the prices obtained were, in the latter part of the year especially, below the programme, caused not a little surprise.

Bituminous Coal.—As has been customary, but little business transpired before March. In that month about 350,000 tons of gas coals were contracted for use in this and surrounding cities, or within 50,000 tons of the estimated requirements of the year. The latter quantity was left open for bargains which might come upon the market. No further important transactions were noted, and at this time the gas companies have good stocks. The first importation of Nova Scotia coal arrived here on the 18th of April, at about which time we reported sales of about 60,000 tons for Eastern delivery.

A combination was formed by the Pictou (Nova Scotia) coalmasters, but towards the end of the season it was found that it worked very much to the disadvantage of some, and the result was strong open competition and cutting of prices.

The total production of provincial coal is estimated at about 100,000 tons less than in 1873, and the prices obtained were much lower. As our own coal fields become more fully developed, and means of transportation to the seaboard increase, the market for provincial coals decreases.

In the later part of April, we reported sales of about 200,000 tons of Cumberland Coal, at which time the greater portion of the season contracts were made, of which but a few came to light, and those without the prices realized. There has been considerable competition from this region, and very marked concessions have been made in prices by some of the companies. Like the Anthracite trade, after the season contracts were made, but little important business transpired.

Although our reports are not to hand for the last two weeks, yet it may be estimated that the decrease in production of Cumberland Coal for the year, as compared with 1873, was about 300,000 tons or 11¼ per cent. As this coal is mostly consumed for steam and smelting purposes, when we consider the condition of the iron and other manufacturing interests, and the condition of the transportation business of the country, it can be said that the record of this field is not bad, especially when we note that the business is not more than 25 000 tons behind 1872, when the iron business was exceedingly brisk. An important Foreign business is being built up by this Region, a large amount having been shipped to the West Indies during the year, and several thousand tons have passed right by the Nova Scotia Mines on the way to Canadian cities.

NOTICE.

Owing to the space occupied by our Annual Coal Review, and a number of our reports not coming to hand in time, on account of our going to press a day earlier than usual, we are compelled to leave out considerable of our usual valuable trade information.

IRON MARKET REVIEW.

Import Duties.

The following are the duties in Gold on Iron:

Flat Iron, not less than 1, nor more than 6 inches wide, nor less than ⅜, nor more than 2 inches thick. *Round Iron*, not less than ¾, nor more than 2 inches in diameter, and *Square Iron*, not less than ½, nor more than 2 inches square ₱ lb. 9-10 of 1c.
Flat Round or Square Iron, of larger or smaller sizes than the above mentioned, per lb 1 35-1000

Provided, that all iron in slabs, blooms, loops, or other forms, less finished than bars, and more advanced than pig iron, except castings, shall pay the same as iron in bars.

Provided, that none of the above iron shall pay less than 31½ per cent.

Railroad Iron.....630. per 100 lb.
Boiler plate, or other plate iron not less than 3-16 of an inch thick, per lb..... 1 35-100 c.
Scrap castings per ton..... $5 40
" *wrought* " " 7 00
Pig iron per ton..... 6 30
Iron ore 10 per cent. *ad valorem.*

New York.

Dec. 31, 1874.

American Pig.—No improvement can be noted in the demand for this article. The Thomas Iron Company report sales of 2500 tons of mixed brands at $25 for No. 1 X; $24 for No. 2 X; and $23 for gray forge, with a sale of 250 tons on Tuesday at $26. We also note sales of 250 tons for March delivery, said to be at $26, and 200 and 500 tons No. 1, first-class Lehigh brands, at $25 for immediate delivery. A prominent North River firm is reported to have made contracts during this month, for the delivery of 3000 tons of No. 1 iron during next year, of which 1600 tons and from 300 to 400 tons were sold at $25, and 1000 tons on private terms. There is a general disinclination on the part of the furnace companies to sell for future delivery at the prevailing prices. Not so much because they see better prices in the early future, but because they have concluded to take the risk of an advance, and reap the benefits, if there are to be any. They think that if prices are not at the bottom they are very near it, and that their chances are about as good in looking for an advance as a decline. When it becomes known that a consumer wants a particular brand of iron good prices are asked, but with such exceptions, prices may be considered weak. It is stated that there are from 15,000 to 30,000 tons of iron in Boston, which are being offered at prices leaving no margin on New York rates.

Scotch Pig.—The arrivals during the week under review have been about 500 tons. The business transacted has been quite light and only in a very small way. The market is not over-stocked, there being only about 800 tons for sale—yet there is a weakness in prices; Coltness is quoted $39@$40; Eglinton $35; and Glengarnock $37 50@38.

Rails.—We note the sale of between 2500 and 2600 tons of English, at $35 gold, in bond. The same parties are negotiating for about 1100 tons more American are without change, with no transactions. We quote $48@$53 at mill. There have been no transactions in Bessemer, which we quote at $70@$75 at the mill. Late English advices state that rails are being sold through second hands, as low as £6 5/. This lacks but very little of permitting them to enter this port.

Old Rails.—We note the sale of 200 tons at $27 and 100 tons at $26 50.

Scrap Iron.—Is without change or transactions.

Cleveland.

Dec. 30, 1874.

Specially reported by Messrs. C. E. BINGHAM & Co., dealers in pig iron and iron ore

As will be seen below our quotations show a further decline.

No. 1, Bituminous " ..... 28 00@....
No. 2, " " ..... 27 00@....
No. 1. " Gray Forge..... 24 00@....
No. 1, Lake Superior Charcoal..... 31 00@....
No. 2, " " ..... 30 00@....
No. 3, " " ..... 31 50@....
No. 4, " " ..... 32 00@....
Nos. 5 and 6 " ..... 32 00@....
American Scotch, No. 1, Cherry Valley..... 32 00@....
" " No. 2..... 28 00@....

Cincinnati.

Dec. 29, 1874.

Specially reported by Messrs. TRABER & AUBERY, commission merchants for the sale of pig iron, blooms, ore, etc.

The market for pig iron is very dull and prices remain unchanged. We quote:

CHARCOAL.

Hanging Rock, No. 1, Foundry.....	$28	00@30	00—4 mos
" No. 2, "	26	00@27	00—4 mos
Mill	25	00@26	00—4 mos
Tennesse No 1, Foundry.....	27	00@29	00—4 mos
Tennessee. No. 2 "	25	00@26	00—4 mos
" Mill.....	24	00@25	00—4 mos
Missouri, No. 1, Foundry.....	30	00@31	00—4 mos

STONE COAL.

Ohio No. 1, Foundry.....	27	00@29	00—4 mos
" No. 2, "	25	00@26	00—4 mos
Ohio Mill.....	24	00@25	00—4 mos
Missouri, No. 1, Foundry.....	28	00@30	00—4 mos
" No. 2, "	26	00@27	00—4 mos
" Mill.....	25	00@26	00—4 mos

CAR-WHEEL.

Hanging Rock, C. B.....	48	00@52	00—4 mos
Tennessee "	45	00@48	00—4 mos
Missouri "	45	00@48	00—4 mos
Alabama "	45	00@48	00—4 mos

BLOOMS.

Charcoal	75	00@ 90	00—cash

SCRAP IRON.

Cast.....	75@	1	00—cash
Wrought	1 25@	1	50—cash

Chicago.

Dec. 29, 1874.

Specially reported by Messrs. ROGERS & Co., dealers in Scotch and American pig iron.

Quotations are as follows:

No. 1 Coltness.....	$46 00@ ....
No. 1 Gartsherrie.....	45 00@ ....
No. 1 Summerlee.....	44 00@ ....
No. 1 Glengarnock	42 00@ ....
No. 1 Eglinton	40 00@ ....
Warner's "American Scotch".....	41 00@ ....
Massilon No. 1 Foundry.....	37 00@ ....
No. 1 Grand Tower Mo. ores (Bituminous).....	33 00@ ....
No. 2, " " "	30 00@ ....
No. 1 Mill..	28 00@ ....
Union "A" 1 (Anthracite).....	32 00@ ....
Union "B" 1 (Anthracite).....	30 00@ ....
No. 1 Lake Superior (charcoal)	34 00@ ....
No. 2 Lake Superior "	32 00@ ....
No. 3 Lake Superior "	36 00@ ....
No. 4 Lake Superior "	42 00@ ....
Bessemer Steel Rails.....	85 00@90 00
New Iron Rails.....	55 00@ ....
Old Rails.....	28 00@30 00

Indianapolis, Ind.

Dec. 28, 1874.

Specially reported by NELSON KINGMAN, broker and dealer in pig iron, etc.

Continue quotations.

New Rails at mill.....	$56	00@58	00
Old Rails "	28	00@30	00
Hanging Rock Charcoal Pig No. 1 foundry	31	00@32	00—4 mos
" " " " 2 "	29	00@30	00—4 mos
" " " Mill.....	27	00@28	00—4 mos
STONE COAL.			
Indiana No. 1 Foundry pig Planet furn'e.	32	00@33	00—4 mos
" 2 " " "	30	00@32	00—4 mos
" 1 Forge " "	29	00@	....—4 mos
" 2 " " "	27	00@	....—4 mos
Ohio No. 1 Foundry pig.....	30	00@31	00—4 mos
" 2 "	29	00@30	00—4 mos
" 1 mill	26	00@27	00—4 mos
Merchant Bar, card rates		per lb. c.	2.60
1st quality C. H. No. 1 Boiler Plates, per lb		5¾c.—3 mos	
1st " Com. Sheet, for No. 24, W.G. "		4½c.—3 mos	
1st " Charcoal Sheet " " "		6 c.—3 mos	
Best Bloom Galvanized Sheet, discount 20 per cent.....—cash.			
2d quality " " " 30 " .....—cash.			

f. o. b. in Indianapolis.

Louisville.

Dec. 29, 1874.

Specially reported by GEORGE H. HULL, Esq.

The usual time, 4 months, is allowed on the quotations below.

HOT BLAST—CHARCOAL.

No. 1 foundry, from Hanging Rock ores.....	$28	00@30	00
No. 2 " " "	26	00@27	00
No. 1, forge, " "	24	00@25	00
No. 1, foundry, " Tennessee "	26	00@28	00
No. 2 " " "	25	00@26	00
No. 1, forge, " "	24	00@25	00
No. 1, foundry, " Alabama "	26	00@28	00
No. 1 " " Iron Mountain "	28	00@30	00

HOT BLAST—STONECOAL.

No. 1, foundry, from Missouri ores.....	29	00@30	00
No. 2, " " "	28	00@29	00
No. 1, forge " "	27	00@28	00

COLD BLAST—CHARCOAL.

Wheel from Hanging Rock ores.....	40	00@50	00
" " Tennessee "	36	00@38	00
" " Alabama "	40	00@42	00
" " Georgia "	40	00@42	00
" " Missouri "	40	00@42	00
" " Kentucky "	30	00@42	00

San Francisco.

From the *Commercial Herald* of December 17.

The steamer *Ajax* from Portland brought down 72 tons Oregon pig iron; price $46. This is a very superior article of soft iron that is very much valued by our foundrymen. Scotch pig iron to arrive may be quoted at $40@42, and for spot parcels $42 50@47, according to brand and quantity. Tin plate is in large stock, and with a light demand prices are more or less nominal. We note a sale of 100 tons American pig iron, ex *St. John Smith*, at $43 50.

METALS.

NEW YORK, Dec. 31, 1874.

Bullion.—Fine silver bar is quoted at $1 26@$1 27, gold, per ounce, and fine gold bar at par ($20 67, gold, per ounce) to ¼ per cent. discount.

Copper.—There have been no important transactions noted during the week under review. There is not much copper offering, and the little there is, is held at 23¼c.@23½c. for spot, and 24c. for January and February delivery. The latest London quotation for Chili bars is £84. We have been furnished with the following, which has been taken from official figures: The production and importations of copper for the years 1872, 1873 and 1874, were 120,000,000 lb.; the exportations 8,000,000 lb.; the balance undelivered and on hand, 12,000,000 lb.; and, as we began 1872 with no stock, but were compelled to import 5,000,000 lb to meet our wants, it shows that our consumption has been at the rate of 33,000,000 lb. per year, or 100,000,000 lb. during the three years.

Tin.—There is very little doing in either pig tin or tin plates. Straits are held at 22c.; L. & F., 21¾c.; Refined, 22c.; and Banca 26¼@26½c., all gold. The latest London quotations to hand report Straits at £95; L. @ F., £100; and Refined £101; which is an advance of £1 since the date of our last. Tin plates are firm at our last quotations.

Lead.—The sales of the week will aggregate about 100 tons, of which 50 tons were sold at $6 10, and small lots as high as $6 20. The market may be quoted at about $6 12½. There have arrived during the week 5500 pigs of Selby lead, which are being put in store, holding for $6 35. The Government is doing nothing, apparently holding for better figures. Foreign is quoted at 6¾c., with no business.

Spelter and Zinc.—There is nothing doing in spelter, which is quoted at 6¾c.@7¼c. gold, for foreign, and domestic at 6½c.@6¾c. currency. There is little business doing in sheet zinc, which is firmly held at 9¼c @9½c., gold.

Antimony.—There is but little in the market, and it is being held at 12½c. gold, with every prospect of higher prices.

Manganese.—There is no pyrolusite in the market. N. B. manganite is quoted at 3c. gold, per lb.; Georgia, 2½c.; and Virginia psilomelane, 2c.

Quicksilver.—This article is without change, the quotations being $1 65 per lb., in this city; $1 55 in San Francisco, and £26 per flask (75 lb.) in London.

Miscellaneous Stocks.

NEW YORK, Dec. 30, 1874.

The following list has been very firm during the operations of the past week with transactions rather limited. We note a sale of some 300 shares of the Pennsylvania Coal Company at auction to-day at $245 per share. Small transfers of the Delaware and Hudson Canal Company, Delaware, Lackawanna, and Western Railroad and the New Jersey Central Railroad occurred this P.M. at our quotations. Our quotations of the Philadelphia market represent the closing prices on the 28th inst., the market closing firm under moderate transactions. The Lehigh Valley Railroad announces a quarterly dividend of 2½ per cent. payable on the 15th of January.

New Jersey Central R. R. Co	—	107¼
American Coal Co	—	50
Maryland Coal Co	—	19
Pennsylvania Coal Co	—	245
Quicksilver Mining Co. Preferred	—	40
" " Common	—	33⅛
Reading R. R. Co	—	54¾
Delaware and Hudson Canal Co	—	116¾
Lehigh Coal and Navigation Co	—	48¼
Lehigh Valley R. R. Co	—	60¾
Catawissa Pref-rred	—	40½
Delaware, Lackawanna & West. R.R.Co.	—	109⅞
Consolidated Coal Co	—	42½
Little Schuylkill R. R		48½
Huntington & Broad Top R. R. prefrd	—	12
St. Louis & Iron Mountain	—	26¼
Susquehanna Canal	—	6
Delaware Division Canal	—	—
Spring Mt. Coal Co	—	63
Cumberland Coal and Iron Co	—	48
N. Y. & Nova Scotia Iron Co	—	116

Boston Stock Market.

BOSTON, Dec. 30, 1874.

A decline of $4 per share in the Allouez Mining Company is the most important feature of the following report. The remaining portion of the list is nominally unchanged. We note the following sales as having occurred on the 29th inst.: 50 shares of Allouez at $8; 100 shares of Copper Falls, S. 30, at $12 50, and 125 shares of the Franklin Mining Company at $7 per share.

Allouez	6	Pewabic	—
Calumet and Hecla Co.	141	Phœnix	12
Copper Falls	12	Quincy	44
Central	26½	Ridge	6¾
Franklin	—	Rockland	1

San Francisco Stock Market.

The San Francisco share market still continues its remarkable upward movement. The advance of Consolidated Virginia is $115 per share above our last quotations. This stock reached the astonishing figure of $600 per share at one time during this week, the following quotations being $15 less than that figure. Union Consolidated has declined $10 per share, Eureka G. V. and Meadow Valley are unchanged; with these exceptions, the whole list follow the advance of the favorite items.

The following quotations are per telegraph dated Dec. 29th:

Gould & Curry	59	California	496
Savage	143	Overman	96
Chollar Potosi	89	Raymond & Ely	25
Ophir	202	Eureka G. V	8
Hale and Norcross	72	Best & Belcher	77
Crown Point	52	Kentuck	23
Yellow Jacket	169	Meadow Valley	6
Belcher	57	Alpha	40
Imperial	20	Sierra Nevada	26
Consolidated Virginia	585	Union Consolidated	72

American Institute of Mining Engineers.

OFFICIAL BULLETIN.

Announcements to Members and Associates.

I. The ENGINEERING AND MINING JOURNAL, which is the Organ of the Institute, and contains its proceedings, transactions and notices of meetings, will be sent to each Member and Associate on the payment of his annual dues. Back numbers cannot, as a rule, be sent.

II. Dues (ten dollars per annum) are payable on election and at the annual (May) meeting. Members and associates elected at the February meeting pay ten dollars only to May of the following year. Remittances should be made, as far as possible, by P. O. Order, payable to the Secretary.

III. The Council earnestly requests members to forward to the Secretary, for preservation, copies of all printed mining and geological reports, particularly pamphlets, which may fall in their way. It is believed that by this means a large amount of valuable fugitive information concerning different regions and properties in this country, may be caught and preserved.

IV. Blank proposals for membership can be had on application to the Secretary.

V. The first volume of Transactions of the Institute will be sent by the Secretary to any address, on the receipt of five dollars.

VI. Members are earnestly requested to inform the Secretary promptly of any change of address.

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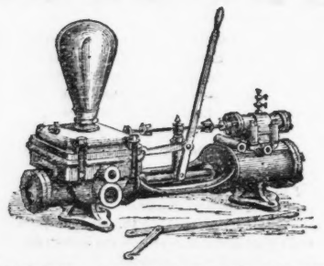

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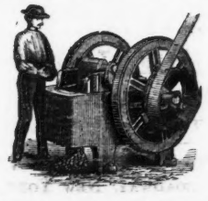

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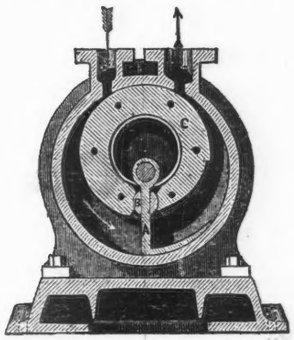

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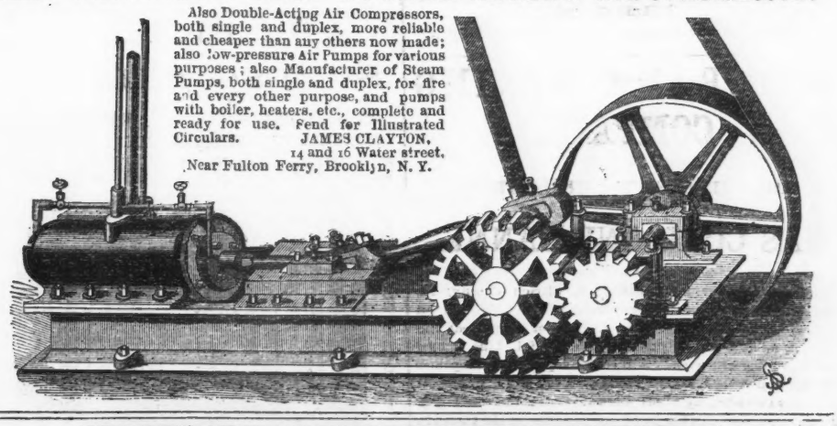

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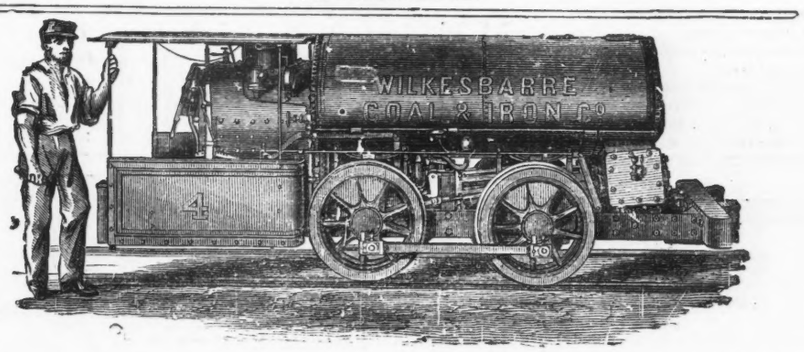

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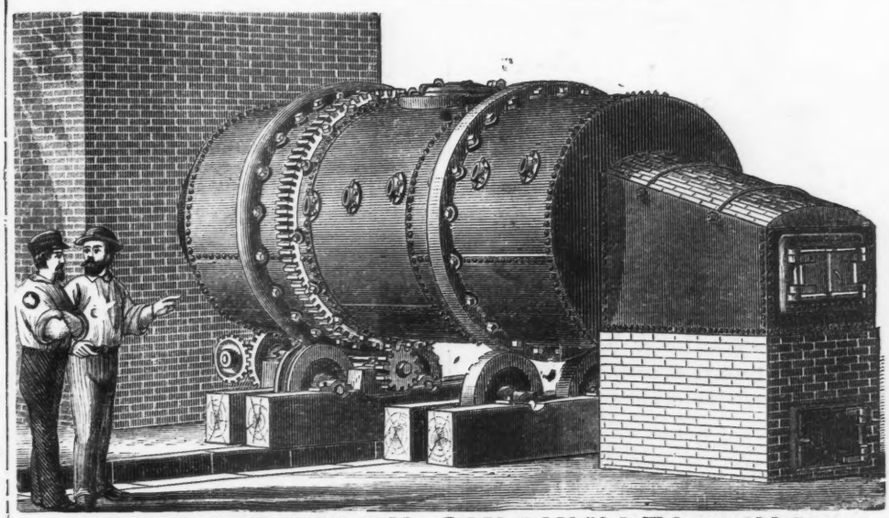

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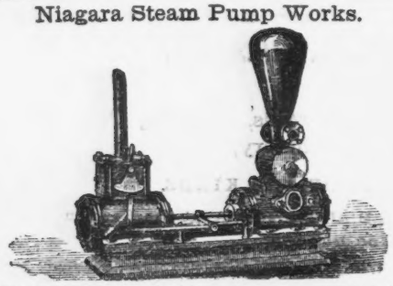

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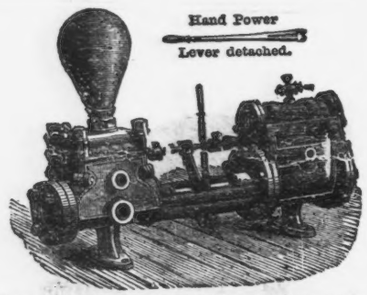

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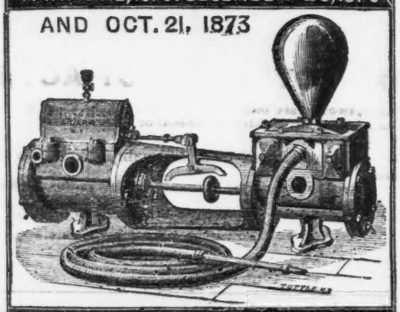

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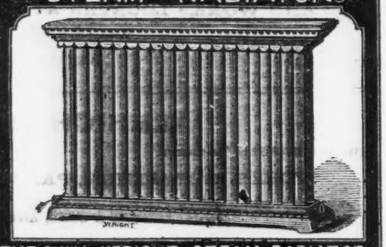

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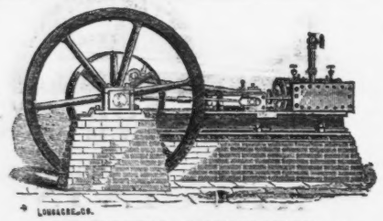

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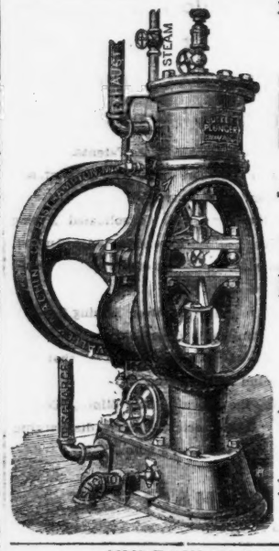

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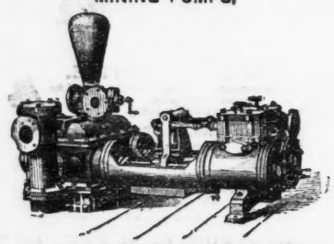

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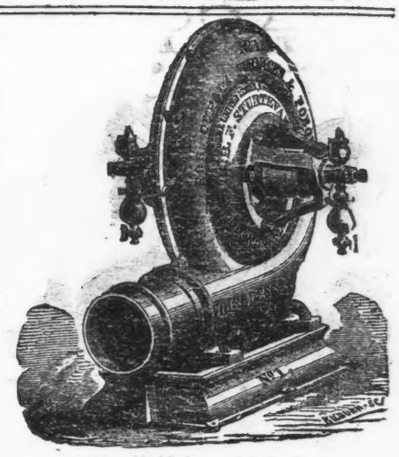
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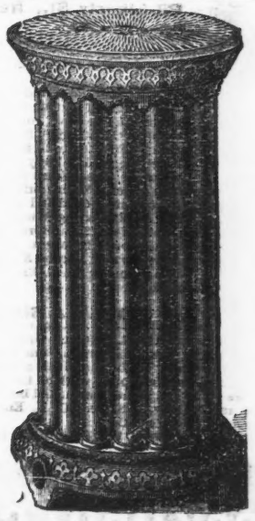
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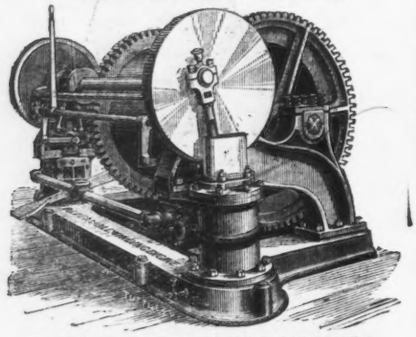

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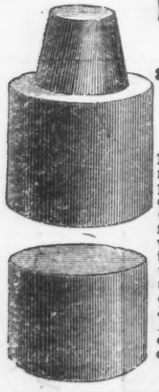

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☞ Look at following extract, Ingersoll Co.'s letter of excuses, ENGINEERING AND MINING JOURNAL, June 6, and compare with their advertisement: "I had *two* drills at the mine from the commencement, one beginning work on the 4th of April, the other on the 7th of the same month, and both drills working until the 1st of May." Signed, C. N. ELLIOTT, Superintendent Ingersoll Rock Drill Co.
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Second week " " " " .....459 "
918½ ft

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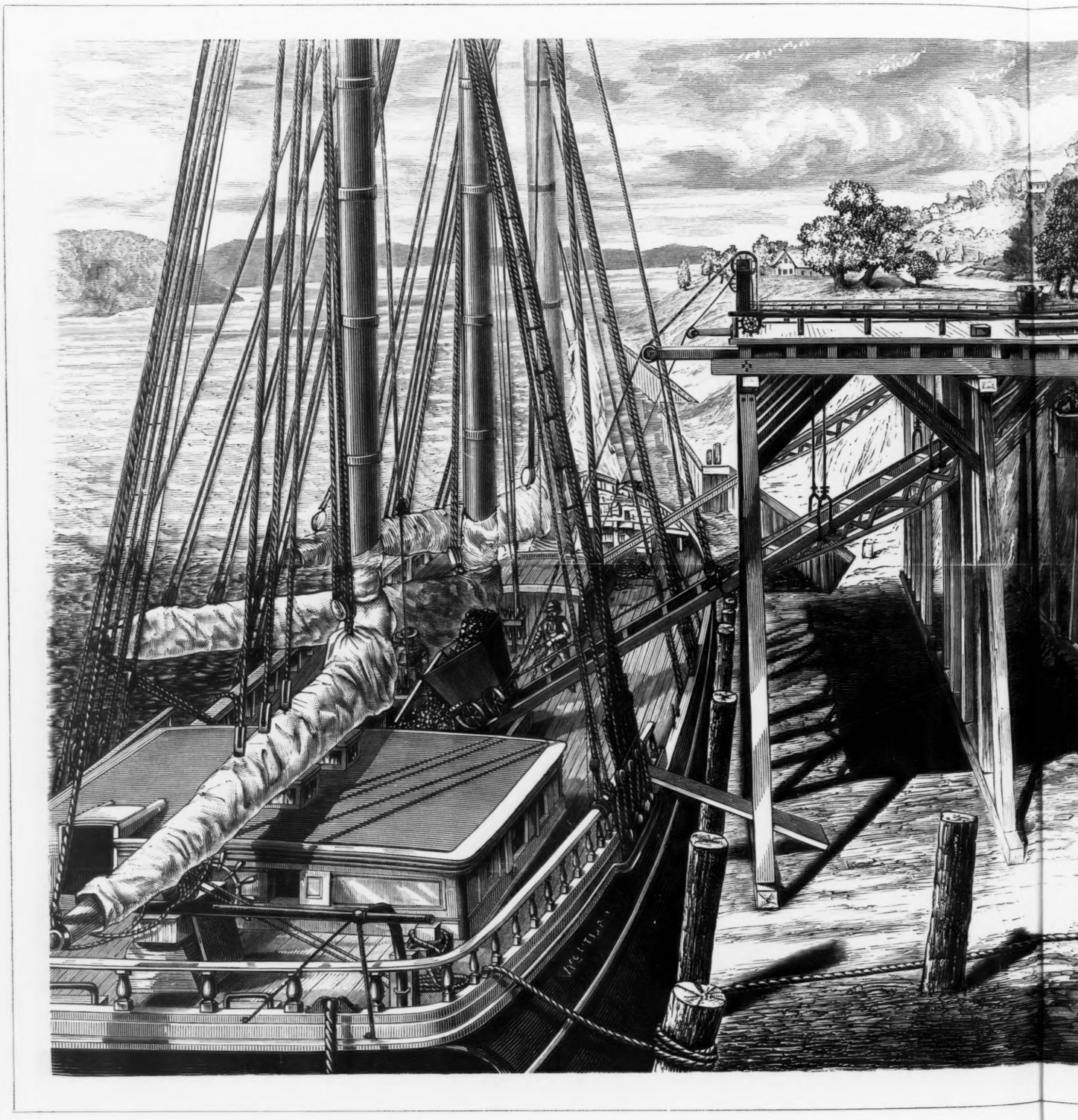
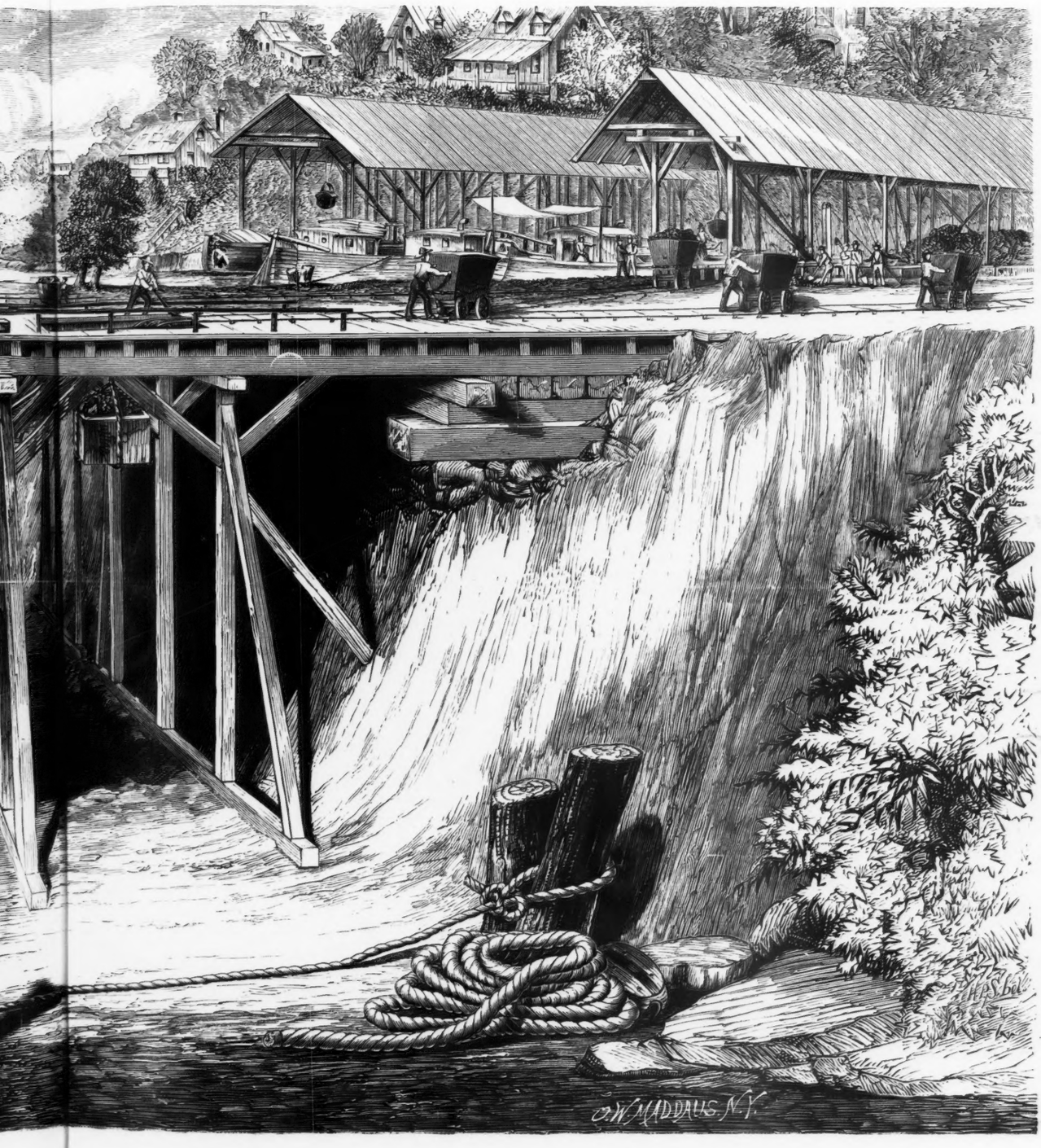


RAY'S DOCK, GEORGETOWN, D. C., showing device for Shipping Cumberland Coal w



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